

# western industry



Unusual mill rolls large steel rings with speed and accuracy. See page 29.



*featuring:* RING ROLLING MILL CHANGES  
PLANT PRODUCTION CONCEPT

*special:* QUALITY CONTROL AND INSPECTION  
LITERATURE ON TESTING & INSPECTION EQUIPMENT



I  
make  
lamps



**Whatever you make of aluminum** — lamps or ladders, skillets or skiffs — Jorgensen's experienced metallurgical engineers are always ready to help solve any problems you have in selection and processing. Depend on Jorgensen, too, for modern cutting facilities and complete stocks of sheet, plate, rod, bar, tubing, structurals and extrusions. Your orders are delivered immediately by Jorgensen's own truck fleet. Whenever you need aluminum . . . Call Jorgensen first!



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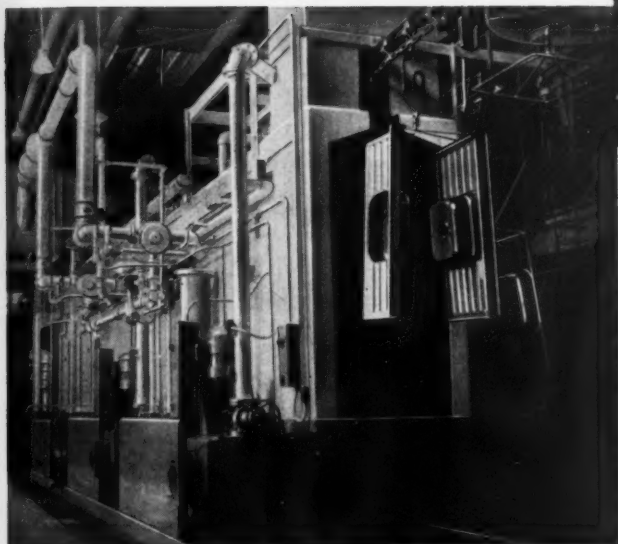
you can now  
have your

# Mahon finishing equipment



from spray booths  
to complete systems

## ...built in a West Coast plant



MAHON . . . the acknowledged leader in metal-cleaning and metal finishing equipment . . . is now geared to economically supply your equipment needs from a local source. The new manufacturing plant of Mahon's Western Operation at Torrance, Calif., is now in operation and is backed by unmatched staff engineering specialists in the finishing and allied field. This unique tie-in means cost savings, time savings, better service and the best in finishing for the manufacturing industries of the Pacific area.

Many companies have learned that improved finishing often means the easiest . . . and most economical . . . product improvement they ever made. New developments make improvement possibilities more pronounced. But, for maximum benefit the choice has to be Mahon—their experience is your surest safeguard and biggest value. Write the Western Operation for descriptive literature.

**MAHON INDUSTRIAL EQUIPMENT** • Complete Finishing Systems • Metal Cleaning Equipment  
• Painting Facilities (Spray Booths, Flow Coaters and Dip Coaters) • Filtered Air Supply Systems • Drying and Processing  
Ovens • Dust Collectors and Fog Filters • Automatic Conveying Systems • Special Plant and Production Equipment

**CONSTRUCTION SERVICES** • Structural Steel-Fabrication and Erection • Steel Fabrication—Weldments

**MAHON-WEST** / 2600 MONTEREY ST., TORRANCE, CALIF.

WESTERN OPERATION OF  
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# MAHON

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WESTERN INDUSTRY/AUGUST 1960

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**COVER PHOTO**

*HUGE 50 TON ring rolling mill, the only one of its kind in the Western Hemisphere, rolls steel rings up to 55-in. in diameter in one minute. Mill has completely changed production concepts at Viking Steel and Forge Co., Albany, Calif. where it was installed. For story see page 29.*

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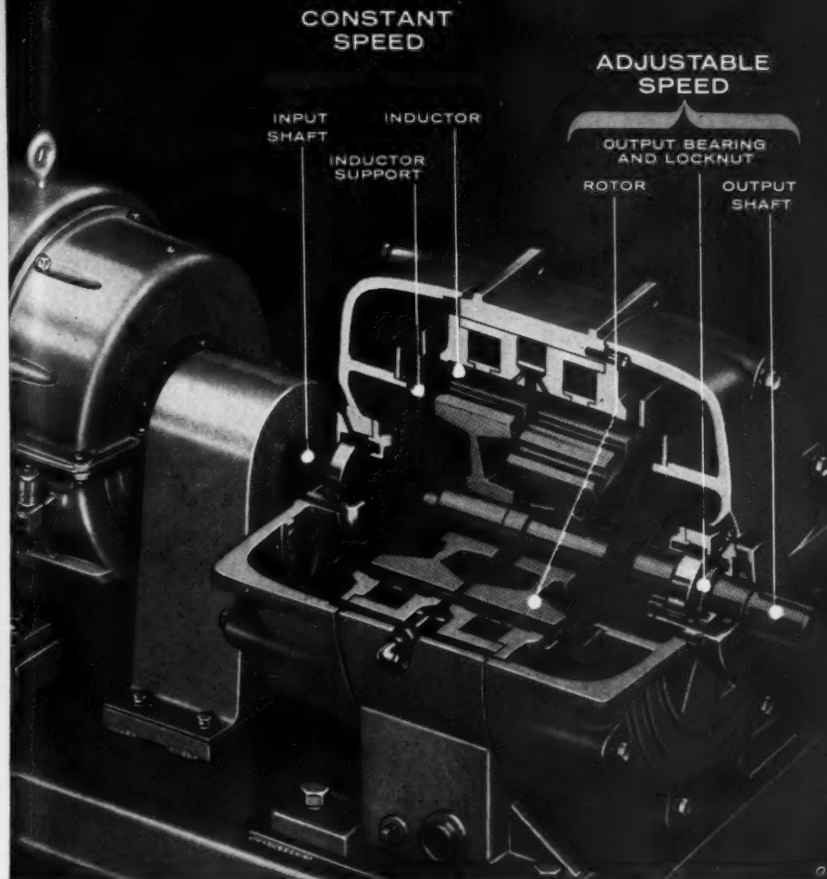
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**A compact, adjustable speed drive up to 2000 hp!**

Based on a liquid-cooled magnetic coupling design, the *all-new* Louis Allis Magnetic Drive offers you the finest in precise regulation, compactness, and design flexibility for adjustable speed drives up to 2000 hp.

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If your plans call for adjustable speed drives — specify Louis Allis Adjustable Speed Magnetic Drive. Write for a copy of Bulletin 3650 — now available at your Louis Allis District Office, or from The Louis Allis Co., 438 E. Stewart Street, Milwaukee 1, Wisconsin.

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MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES  
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make loading, dock handling and warehousing quicker, easier, less expensive for you. Special features of these end-control electrics include high lifting speed, a turning radius so short that the truck can turn within an inch of its own length and a low step for easy on-and-off operation. A choice of controls is available, specially designed to suit a wide variety of operations. Choose the one that suits your applications best—they all protect fragile loads. Interlocking I-beam mast construction prevents edge-to-edge wear and strain. Economy of operation is assured because of efficiency of handling and long life of the equipment. Capacities: 2000 and 3000 lbs. Yale's new end-control electric is just one truck in the most complete line of industrial lift trucks and hoists manufactured today. For more information contact your Yale representative or write to The Yale & Towne Manufacturing Company, Materials Handling Division, Philadelphia 15, Pa., Dept. KT8.

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TRACTOR SHOVELS • HOISTS

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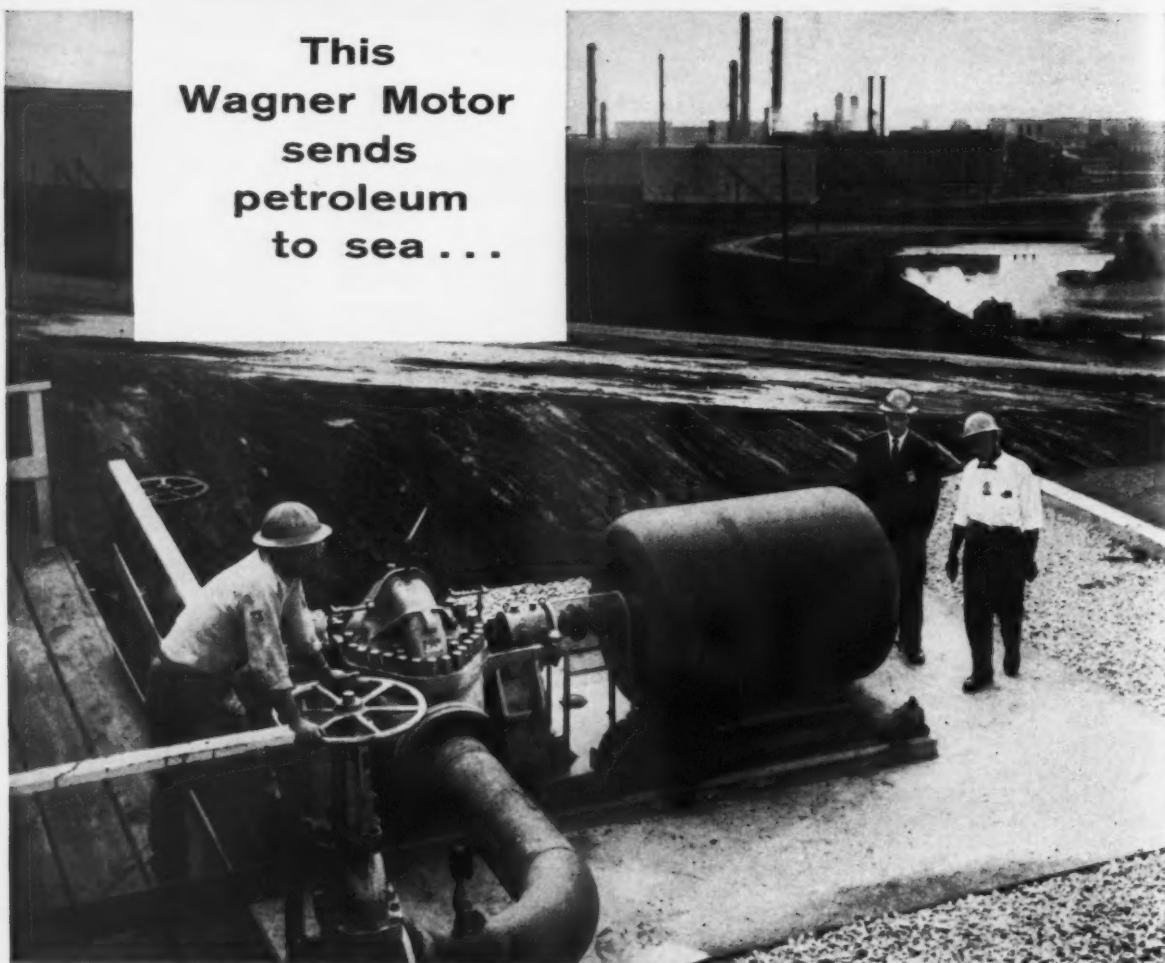
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**This  
Wagner Motor  
sends  
petroleum  
to sea . . .**



This 500 hp WAGNER Type ZP Tube Ventilated Motor pumps oil from storage to tankers 2 miles away.

Big job, moving petroleum products to market. Standard Oil of California does it well . . . helped, at its El Segundo Refinery, by this 500 horsepower Wagner Tube Ventilated Motor. This explosion-proof motor's job: provide the power to pump crude oil from storage tanks down to the sea—and waiting tankers—two miles away.

Starting oil on a bon voyage is just one of many heavy-duty jobs performed by Wagner Tube Ventilated Motors. They also power big fans, blowers . . . any heavy-duty application that must be operated for long periods of time without a shut down.

These motors have fabricated steel frames that contain a series of tubes (as shown in photo below) through which cooling air is forced by an external blower. Internal blowers, one at each end of the rotor, circulate the warm air inside the motor through ducts in the rotor and stator and around cooling tubes. This effective cooling system holds the operat-

ing temperature of the motor within specified limits to lengthen motor life.

Whatever your motor requirements—large or small, for plant or product—Wagner can supply a standard motor or build a special motor to fit your needs. More than 65 years of constant research and development in electric motor design have made Wagner a name you can depend on. Call your nearby Wagner Sales Engineer for an analysis of your next motor application. There are Wagner branches in 32 principal cities.



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WESTERN INDUSTRY/AUGUST 1960



# Serving Western Industries... Harbison-Walker Fireclay Refractories made in all classes at Ione, California plant

## assure best service in every application

Produced in the commercial classes and various special modifications, these brands most economically fulfill every industrial furnace need for fireclay refractories. They meet the A.S.T.M. specifications with an added margin of quality.

Basic factors of paramount importance in the manufacture and use of these unsurpassed fireclay refractories are unexcelled quality of clays, sustained research, modern manufacturing facilities including the benefits of long experience and best skills, rigid quality control and technical assistance in all applications. The following significant analogies serve in making the choice of the best brick for various particular uses.

## how ZENITH (superduty) compares with high-duty fireclay brick

In refractoriness, resistance to corrosion by fluxes and thermal shock, high temperature strength and stability of volume in soaking heats, ZENITH is measurably better than high-duty brick.

In cold strength, thermal expansion and thermal conductivity, ZENITH is similar to high-duty brick.

In porosity, permeability, slag penetration and basic oxide content, ZENITH is lower and better than most high-duty brick.

## WESTERN high-duty fireclay brick... power pressed

Among the best high-duty fireclay refractories, the quality of WESTERN brand is maintained on the high side of the average—in refractoriness—physical strength in soaking heats—constancy of volume at high temperatures and spalling resistance.

## WESTERN T high-duty fireclay brick... extruded

WESTERN T in the class of high-duty fireclay brick made by the extrusion method, possesses enhanced properties of low porosity and permeability by slags, abrasion resistance and high strength.

## AMADOR medium-duty fireclay brick... power pressed

AMADOR is the power pressed, medium-duty companion to these brands of special merit. In various rectangular sizes it is second to none in workmanship. It complies with the A.S.T.M. classification by a liberal margin.

## MORTARS

All corresponding mortars are available for every requirement in the use of these brands.

## MONOLITHIC REFRACTORIES

Available also are the Harbison-Walker castables, plastic firebrick and ramming mixes of all kinds—balanced for the selection of the most serviceable product for each particular need.

HW 66-18



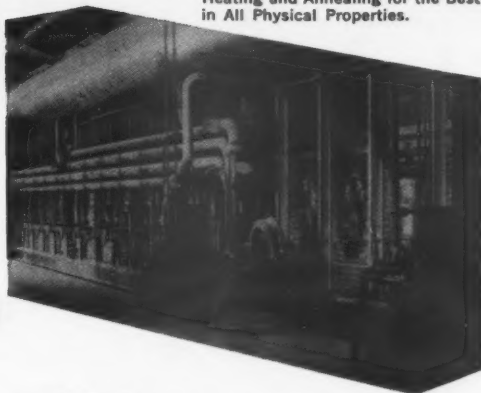
**Harbison-Walker Refractories Co.**

and Subsidiaries

West Coast Offices: San Francisco 5, Calif. Los Angeles 22, Calif.  
General Offices: Pittsburgh 22, Pennsylvania

*World's Most Complete Refractories Service*

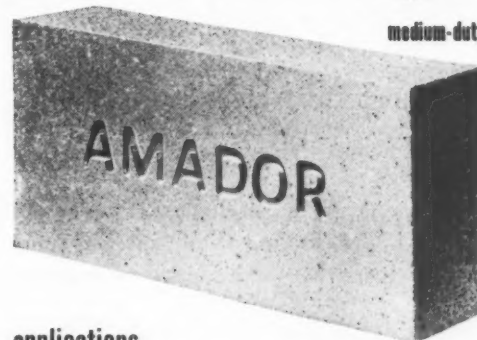
Tunnel Kiln Firing With Controlled Heating and Annealing for the Best in All Physical Properties.



superduty



high-duty

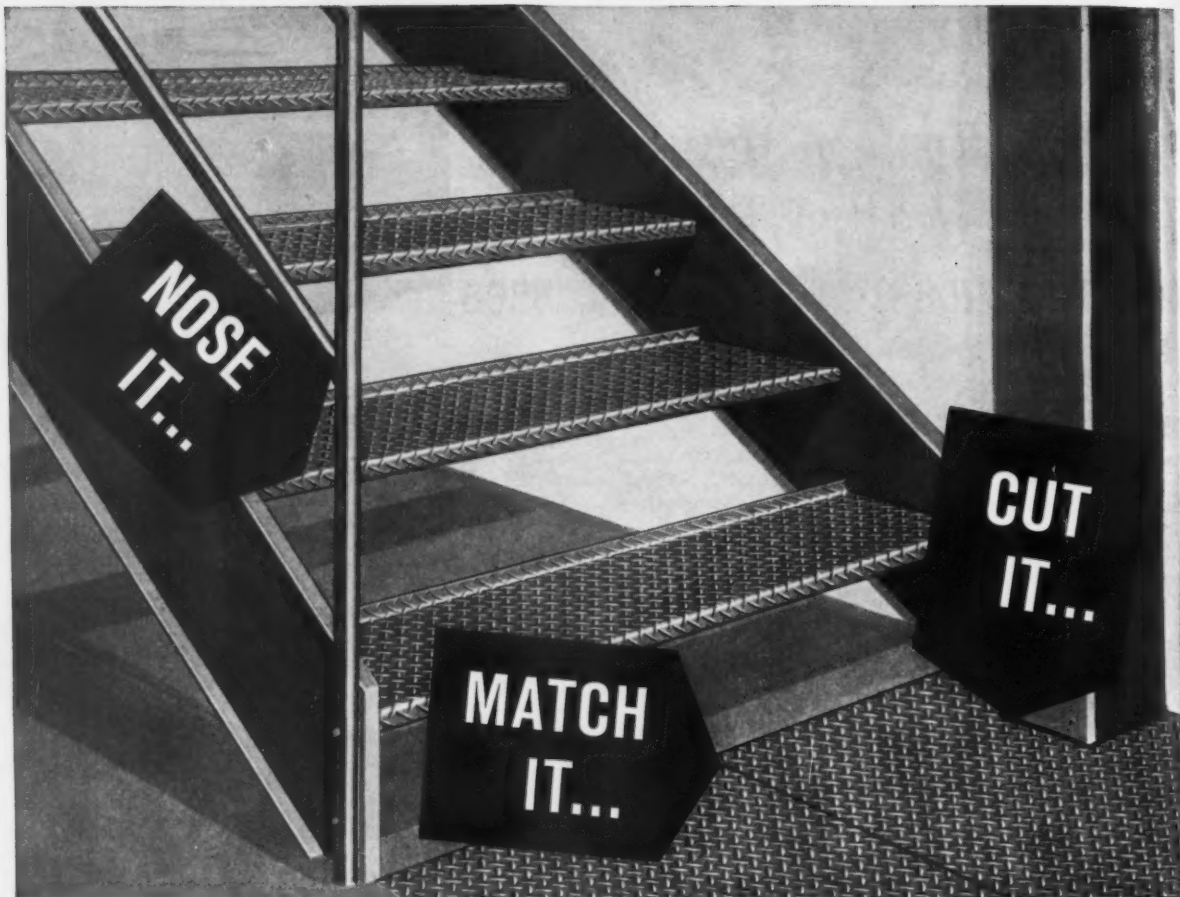


medium-duty

## applications

From these brands can be selected those best suited for specific operating conditions. Some typical uses in which they serve with splendid results are the following: • Boiler Furnaces • Ceramic Kilns • Cement and Lime Kilns • Chemical Plant Requirements • Cupolas • Electric Furnace Roofs • Heating Furnaces • Metallurgical Furnaces • Petroleum Refining and Petrochemical Furnace Equipment • Regenerators and Checkers of Glass and Steel Furnaces • Steel Plant Mill Brick Needs • Blast Furnace Stoves and Piping • Carbon Electrode Baking Furnaces

... for more details, circle No. 6 on Reader Service Postcard



## Alan Wood Super Diamond floor plate ... is easy to fabricate

Here's a heavy duty floor plate that can be sheared, formed, welded, and easily matched. The arrangement of the unique A. W. Super Diamond pattern allows you to bend it at any place.

A. W. Super Diamond will last for years . . . provides a safe, non-skid footing at all times. Easy to clean? A. W. Super Diamond can be swept, hosed or mopped easily . . . from any angle.

For easy fabrication and installation . . . for safety . . . for long wear . . . specify A. W. Super Diamond. Write for Bulletin SD-S6.



### ALAN WOOD STEEL COMPANY

Conshohocken, Pa. • STEEL PRODUCERS WITH THE CUSTOMER IN MIND

DISTRICT OFFICES AND REPRESENTATIVES: Philadelphia • New York • Los Angeles • Boston • Atlanta  
Cincinnati • Cleveland • Detroit • Houston • Pittsburgh • Richmond • St. Paul • San Francisco • Seattle  
Montreal, Toronto and Vancouver Canada: A. C. Leslie & Co., Ltd.



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WESTERN INDUSTRY/AUGUST 1968

# NOW... an accurate printed record of everything you weigh *Automatically!*

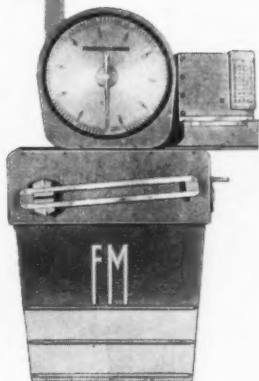
**Yours at the touch of a button  
with the Fairbanks - Morse**

## **PRINTOMATIC WEIGHER**

- Time, date and other identifying symbols may also be recorded simultaneously with weight.

- Weights are printed in digits 5/32" high.

- Also available: consecutive numbering devices, repeaters, coin operating mechanism, balance detector, roll tape and ticket printing, open throat design printer that permits weight tickets to be inserted from either front or side.



**THE VERSATILE ATTACHMENT** that fits any F-M Floaxial Dial Scale to provide you with accurate permanent printed records. Completely eliminates the possibility of human errors in weighing operations; does away with costly disputes between buyer and seller, weighman and trucker. Instead, you get *truly automatic weighing* . . . the Floaxial Dial Scale plus Printomatic accurately record correct weights on tickets, roll tape or both!

**WAREHOUSES** find *Printomatic* valuable in effective cost control. *Printomatic* furnishes a printed, permanent record of every shipment entering the warehouse—an effective check on the cost of raw materials.

**INDUSTRIAL OPERATIONS** often include *Printomatic* directly on the assembly line to accurately weigh and tag products and product parts.

F-M *Printomatic* Weigher makes the printing of weight figures a simple matter—no matter what the application! Check these dependable Fairbanks-Morse *Printomatic* features.

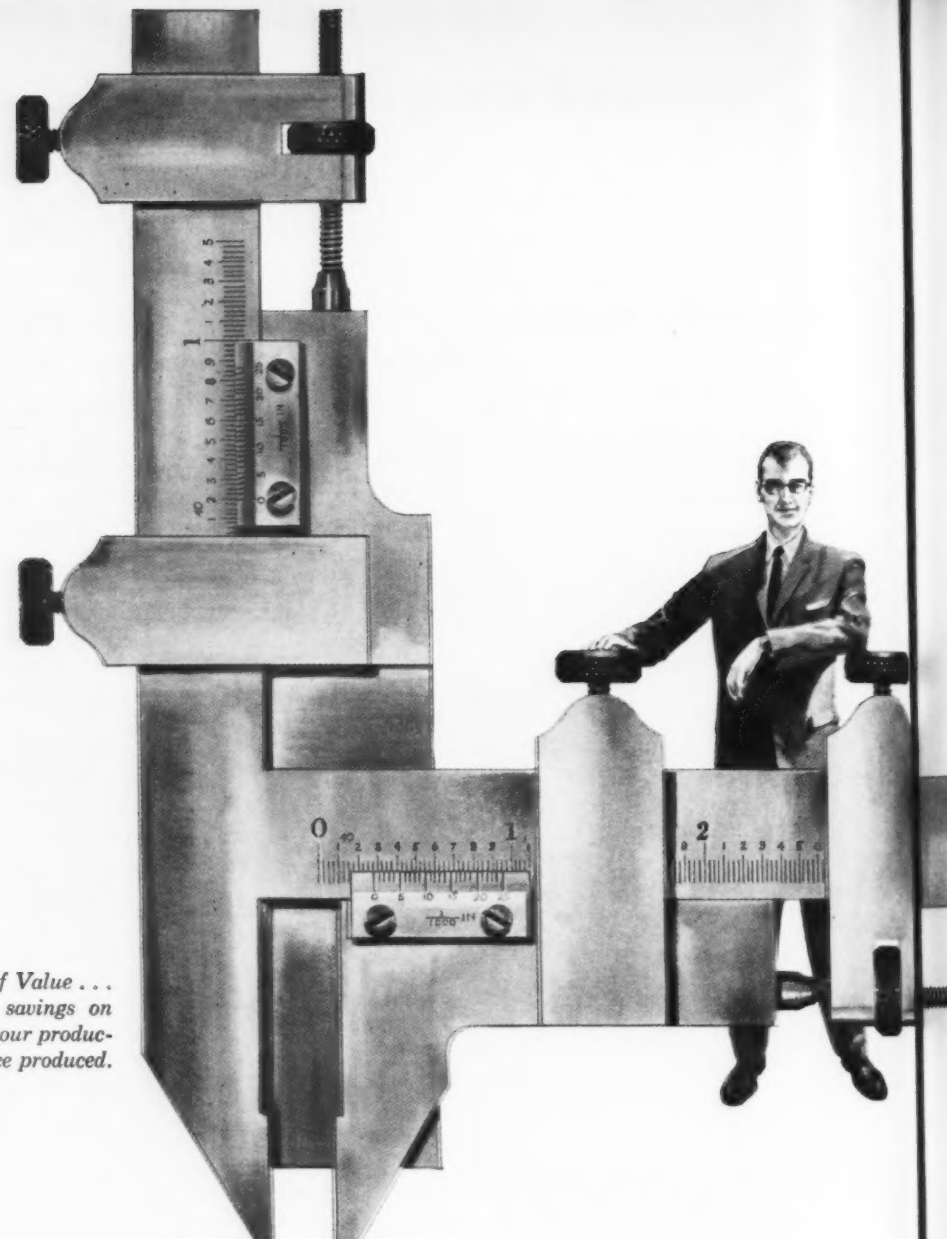
Learn how truly automatic weighing, the Fairbanks-Morse *Printomatic* way, can make your operations more efficient, more profitable. Write to Fairbanks, Morse & Co., Scale Division, Fair Lawn, New Jersey.

## Fairbanks, Morse

SCALE DIVISION

A MAJOR INDUSTRIAL COMPONENT OF  
FAIRBANKS WHITNEY CORPORATION





*The Norton Measure of Value . . .  
The true measure of savings on  
materials you buy for your produc-  
tion is the cost-per-piece produced.*

You can produce greater



Price and Value are two different things.

There are less expensive grinding wheels than Norton wheels — and on the invoice they may look like a good buy. But if the wheels purchased fail to perform efficiently on the production line or incur production delays because of poor quality or misapplication — true value is not there and a higher cost of production is the price actually paid.

In brief, the true value of a grinding wheel is not how much you paid for it — but how much you get from it. Here is what you can get from Norton —

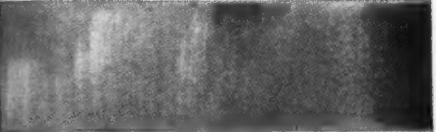
Norton Company gives you the most advanced research, engineering and manufacturing facilities in the entire abrasive field — and you get this great scope of detailed knowledge on a personal basis — your Norton Man.

Your Norton Man starts his career by spending a minimum of 1 year in a carefully planned training course in the Norton plant and a comparable period of training in the field. The Norton Man has an average of 15 years' abrasive experience in addition to the specialized training. He is the most knowledgeable man in abrasives that you can consult. He is your consulting abrasive engineer.

He will make a free Abrasive Requirement Study for you. This study lists the correct specifications for each abrasive job in your plant to assure you lowest cost-per-piece produced. He is also available for complete field testing on specific problems.

Your Norton Man can save you money by pointing out ways to better wheel usage and fewer wheel changes. He can also be of great help to you in your pre-production purchase analysis and value analysis. He has the widest selection of grinding wheels in the industry to help him select the perfect wheel for new product grinding operations and improving your current grinding jobs — both at the lowest cost. And with Norton grinding wheels you can be sure of precise duplication order after order.

Your Norton Man and your Norton Distributor will be glad to show you how true abrasive economy pays off in lower cost-per-piece produced.



Call your Norton Man — he has the experience, the products, and knows how to save you money where it counts. There's a Norton expert in the fields of — abrasives . . . machine tools . . . refractories.

# savings than you can buy.....

Call them and take advantage of their knowledge.  
NORTON COMPANY, General Offices, Worcester 6, Massachusetts. Plants and distributors around the world.



75 years of... Making better products...  
to make your products better

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# NINE...

## EVERY ONE A CHAMPION

*(and all from the same source)*



STEEL CASTINGS

CLOSED DIE FORGINGS

IRON CASTINGS

PRESSED FORGINGS

NODULAR CASTINGS

EXTRUDED FORGINGS

MALLEABLE CASTINGS

HAMMER FORGINGS

UPSET FORGINGS

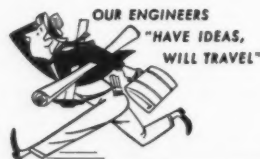
*The most complete Foundry and Forge services in the West*

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Forge Plant—Malleable Foundry  
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*Your immediate attack against rising costs*



**YOU WILL MOVE SO MANY MORE TONS** of materials — so much faster—that your savings multiply amazingly from the very first day you operate a big-capacity Gerlinger fork lift truck. By coordinating the mobile power of job-proved Gerlinger equipment with the handling of your heaviest loads, you profit immediately in time, space and dollars saved. Write for case studies that show you how companies similar to yours are reducing costs through more effective handling operations. TOWMOTOR CORPORATION, CLEVELAND 10, OHIO.

## RENT or LEASE

your Towmotor-Gerlinger equipment. Increase profits without tying up working capital. For information contact Towmotor-Gerlinger Rental Division, Towmotor Corporation.

FORK LIFT TRUCKS, CARRIERS AND TRACTORS SINCE 1919

**TOWMOTOR - GERLINGER**  
THE ONE MAN GANG®

\*Gerlinger Carrier Co. is a subsidiary of Towmotor Corporation.

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western  
industry

# W western meetings

## 1961 Pacific Coast Material Handling Show

THE FIRST MAJOR regional material handling and packaging show to be sponsored on the Pacific Coast by The Material Handling Institute, Inc., has been booked into the San Francisco Cow Palace for the period, February 22 through 24, 1961.

More than 79,100 sq. ft. of booths are laid out in the Cow Palace exhibit areas for The Material Handling Institute Pacific Coast Show. Booth assignments will be made immediately following a space drawing on September 9.

Producer of this West Coast event is The Material Handling Institute, Inc. A national trade association, MHI member-companies produce industrial material handling products, or supply related services. In recent years, the association has sponsored several large national material handling expositions in Eastern states. It also has scheduled regional trade shows in 1960 at Boston and Louisville, Ky.

The Northern California Chapter of American Material Handling Society, Inc., will conduct concurrent educational meetings on show days.

More than 220 exhibit booths have been made available to potential exhibitors in the Cow Palace. This outstanding show and convention center is about two miles from Candlestick Park, new home of the San Francisco Giants.

## Automotive Engineers Hold Conference

THE NATIONAL WEST COAST MEETING of the Society of Automotive Engineers, which is being held at the Jack Tar Hotel, August 16-19, will bring together scores of engineers from all phases of the ground transportation industry.

Highlighting the broad scope technical program of the meeting will be presentations on fuel cells and gas turbines, two of the latest devices in powerplant development. A current trend, the employment of small diesel powerplants in the medium and small commercial vehicles industry will be featured in material presented by two outstanding British engineers.

The subject of vehicle mobility and its relation to design and operation will be an important part of a technical session entitled "On-Off Highway Mobility." Rounding out the technical program will be a session on drive mechanisms and powerplants employed in railroad transportation.

"The Automobile—Dusters to Dior" will be the title of the talk given by the guest speaker, A. T. Colwell, at the SAE banquet Wednesday evening, August 17. Mr. Colwell is Vice President of Thompson-Ramo-Wooldridge, Inc.

## Metal Finishers Convention Held in Los Angeles

THE RECENT CONVENTION of the National Association of Metal Finishers held at the Statler-Hilton Hotel in Los Angeles broke all previous records as to attend-



**TRADITIONAL CEREMONY** of handing over the gavel of office is performed by A. T. Leonard, retiring president of the National Assn. of Metal Finishers, as Robert L. Giesel, right, accepts the office during ceremonies held at the Los Angeles Statler-Hilton.

ance. It was considered the best and most productive meeting that organization has ever had.

Highlights of the convention the annual conclave and management seminar, a membership meeting, a series of plant tours and election of officers. During the convention the society released for its members a metal finishers management manual of some 200 pages. The manual is said to represent close to \$1,000,000 in proven research and tested results.

New association president is Robert L. Giesel, Adolph Plating Inc., Chicago, who succeeds A. T. Leonard. Other officers include: 1st Vice President, Edward N. Marlette, Marlette Plating Co., Buffalo; 2nd Vice President, James E. Cogan, Jr., Globe Electro-Plating Co., Philadelphia; Secretary-Treasurer, Frank Kaiser, Long Island Mechanical Plating Co., Woodside, L. I., N. Y., and Assistant Secretary-Treasurer, Sal Novelli, Service Plating Co., Brooklyn, N. Y.

The convention was hosted by the Metal Finishing Association of Southern California. The convention committee was: A. T. Leonard, Honorary Chairman and National Past President, Superior Plating Inc., Minneapolis, Minn.; Harold E. Coombs, Sr., General Chairman, Crown City Plating Co., El Monte, Calif.; Harold E. Coombs, Jr., Co-Chairman, Crown City Plating Co., El Monte, Calif.; Jerry Burton, Management Seminars, Burton Silverplating Co., Culver City, Calif.; George Irving, Hotel, Specific Plating Co., Inc., Los Angeles; Bruce Smith, Plant Tours, Metal Treaters, Inc., Inglewood, Calif.; Walter P. Behlendorf, Finances, Spence Electro Plating Co., Los Angeles; Francis O'Dell, Registration, Metal Surfaces, Inc., Huntington Park, Calif.; E. Paul Koecritz, Jr., Public Relations, L. A. Parkerizing Co., Inc., Los Angeles; Bert J. Sherwood, Entertainment, Chemplate Corp., Los Angeles; Mrs. B. J. Sherwood, Ladies Program, Chemplate Corp., Los Angeles.



**"DOCTOR—**

*I have detergency anemia. I feel too weak to get the job done.*

*I am too cloudy to sell.*

*I need help!"*



*"Since I tried your treatments,*

*I feel freedom from turbidity—*

*I wake up with extra detergency,  
and feel high solubility all the time."*



*"We have  
just the shot  
for you."*



## MORAL:

Perhaps your liquid detergent can use a "shot" of Maas tetrapotassium pyrophosphate (TKPP) and a vitalizing shot of QUESTEX®. Maas has many case histories of helping manufacturers improve products and increase production. Perhaps we can help you. The A. R. Maas Chemical Co. is the West's leading producer of: sodium phosphates, chlorinated trisodium phosphate, potassium phosphates, phosphoric acids, chelants QUESTEX (EDTA) and photographic sodas.

### A. R. MAAS CHEMICAL CO.

*Division of Stauffer Chemical Company*

4570 Ardine St., South Gate, Calif.

Telephone: LUdlow 8-2214



**MAIL  
TODAY**

A. R. Maas Chemical Co.  
Division Stauffer Chemical Co.  
4570 Ardine Street • South Gate, Calif.

Gentlemen: Please send us information on

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## MEETINGS

(Continued)

### Tool and Manufacturing Engineers Plan Technical Sessions for Their November Conference and Show

TO HELP tool and manufacturing engineers keep abreast of rapid development in their field, the American Society of Tool and Manufacturing Engineers has made special plans for a series of technical sessions to be held at the Western Engineering Conference and Exhibit in Los Angeles, November 14 to 18. The technical sessions will be held at the Ambassador Hotel, concurrent with the exposition at the Memorial Sports Arena.

Noted authorities from around the nation will cover such subjects as ceramic tooling, carbide tools, chemical milling, electroforming, plasmarc coating, precision barrel finishing, servomechanism machine tool controls, and numerical control retrofit of machine tools.

Two "Techtours" are also on the agenda. One on Tuesday, November 15 will include computer programmed machines in the small shop and tape controlled turret drilling. The other, scheduled for Wednesday, November 16 will cover powder metallurgy.

### X-ray School To Be Held in San Francisco

THE THIRTY-SEVENTH Norelco X-ray School will be held at the Sir Francis Drake Hotel in San Francisco the week of September 12-16, 1960 according to an announcement by Philips Electronic Instruments, 750 South Fulton Avenue, Mount Vernon, New York.

Registration for the course which will cover X-ray diffraction, diffractometry and spectography, is open to chemists, metallurgists, physicists, production supervisors, quality control engineers and others interested in the application of these techniques.

Monday through Thursday, the meetings involve extensive classroom and laboratory work. On Friday, guest speakers discuss interesting problems and how they are handled by specific industries.

Participants have ample opportunity to discuss their own applications and to become familiar with all types of equipment. There is no registration fee.

### Arizona Governor Speaks to Purchasing Agents Group

AT A RECENT MEETING of the Purchasing Agents Association of Arizona the feature speaker was Arizona's Governor Paul Fannin. Speaking to over 100 Association members and guests, Governor Fannin stressed the need for modernization of Arizona's governmental purchasing



**WELCOME** is extended to Arizona Governor, Paul Fannin, center, as he arrives to address a meeting of the Purchasing Agents Association of Arizona. Greeting him are Herb Bjornberg, left, purchasing manager, AiResearch Manufacturing Company of Arizona, past president of the group, and Bill Mullen, assistant purchasing agent, Arizona Public Service Company, association president.

techniques. He explained that businesslike procurement methods for the various state agencies and functions are being studied at the first step toward this goal.

During his talk, the governor expressed appreciation for the purchasing agents' in his efforts to attract new businesses to the state. Several purchasing people including past association president, Herb Bjornberg, purchasing manager, AiResearch Manufacturing Company of Arizona are members of the governor's advisory committee for Arizona Industrial Development.

Bill Mullen, purchasing agent for Arizona Public Service Company, and association president conducted the meeting.

## Calendar of Western Meetings

**Aug. 16-19 — SAE NATIONAL WEST COAST MEETING.** Jack Tar Hotel, San Francisco, Calif. Society of Automotive Engineers.

**Aug. 22-24 — 14th ALKALINE PULPING CONFERENCE.** Multnomah Hotel, Portland, Oregon. Technical Association of the Pulp and Paper Industry.

**Aug. 23-26 — WESTERN ELECTRONIC SHOW & CONVENTION.** Sports Arena, Los Angeles, Calif. Western Electronic Manufacturers' Association, Institute of Radio Engineers, Los Angeles and San Francisco Sections.

**Aug. 24-26 — SPECIAL SYMPOSIUM ON FOREST BIOLOGY.** New Washington Hotel, Seattle, Washington. TAPPI Forest Biology Committee.

**Sept. 25-30 — 2nd ANNUAL PACKAGING,**

**PLANT LAYOUT, MATERIAL HANDLING SHORT COURSE.** UCLA Conference Center, Lake Arrowhead, Calif. Write to Engineering Extension, Room 6266G, Engineering Building, Unit II, University of California, Los Angeles 24, Calif.

**Sept. 27-29 — AMC PACKAGING & MATERIAL HANDLING CONFERENCE.** Sacramento, California. "Progress of the Air Force-Industry Team," participation by AMA's Major Air Commands.

**Oct. 5 — REGIONAL TECHNICAL CONFERENCE, PLASTICS VS CORROSION.** Mark Hopkins Hotel, San Francisco. Society of Plastic Engineers.

**Oct. 10-14 — NATIONAL AERONAUTIC MEETING.** Ambassador Hotel, Los Angeles, Calif.

Society of Automotive Engineers.

**Oct. 13-15 — 3rd AWS WESTERN WELDING SHOW.** Exposition Hall, Santa Clara County Fair Grounds, San Jose, Calif. Santa Clara Valley Section, American Welding Society.

**Oct. 17-22 — CONVENTION OF NATIONAL ASSOCIATION OF ELECTRICAL DISTRIBUTORS, WESTERN REGION.** Stardust Hotel, Las Vegas, Nevada.

**Nov. 14-18 — 1960 WESTERN TOOL SHOW.** Sports Arena, Los Angeles, Calif. American Society of Tool and Manufacturing Engineers.

**Dec. 12-15 — ATOMIC INDUSTRIES EXHIBITION.** Masonic Auditorium, San Francisco AIF, Fairmont Hotel; ANS, Mark Hopkins Hotel, San Francisco.



## Two Anaconda Plants to serve the Growing Industrial West

Early last year, the Anaconda Wire & Cable Company added a new facility at Redwood City, California, (Sequoia Wire and Cable Company) for production of a line of wire and cable to meet the special requirements of the fast-moving electronics industry.

Anaconda has long been a partner to the growing, dynamic West and has been proud to have been part of this growth. For over thirty years, the Orange, California, plant has exerted every effort to better serve its utilities, industrials, railroads and other customers in the manner expected by these fast-growing customers.

In addition to complete stocks and technical services located at these two plants, the research and engineering facilities and the varied manufacturing skills of the nationwide Anaconda Wire & Cable Company are available to

—and stand behind—the Orange and Redwood City, California, plants. Anaconda is proud to be part of the growing industrial west.

60264

### **Anaconda Wire & Cable Company Western District Sales Offices**

Denver, Colo.—Los Angeles, Calif.—Salt Lake City, Utah  
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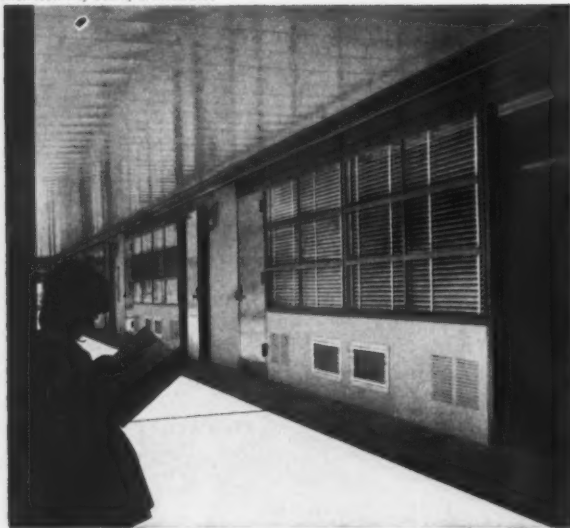
SEE THE MAN FROM

# **ANACONDA®**

**FOR ELECTRONIC  
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# New Western ideas in steel

Architect: Roy Donley & Associates



**Steel Goes to the Head of the Class** as school building material. In Canoga Park, Calif., one shining example is Justice Street School. Styled in steel with a weather-proof roof, a student-proof frame and whisper-proof walls. USS Steel in roof decking, structurals and wall panels locks together for life-long dependability in this fire- and earthquake-safe school by Calcor Corp., of Huntington Park, California.

Contractor: Robert Jolly Construction Co.



**Take to the Hills with Steel** and make the most of a difficult site! Rigid frames of USS Structurals anchor this house and a viewtful deck to an ageless foundation designed by nature. The architect, Thorne of Berkeley, planted the house in a cluster of boulders—but left them undisturbed in the wooded Sierra foothills. Steelwork, like this by Pittsburgh Des-Moines Steel Co., Fresno, Calif., goes up in a day!

Contractor: Whelan Construction Co.



**Spacious Beauty with Ribs of Steel.** Enter the Whelan Building in Palo Alto, Calif., and you sense a new spaciousness—born of steel. The frame, with welded beams of USS Steel, went up in four days! Result: the whole job finished faster. Steel framing means movable partitions inside for more flexible office planning. Architect: Knorr-Elliott Associates, San Francisco. Steelwork: Schrader Iron Works, San Francisco.

Architect: Donald Francis Haines & Associates



**City Hallmark in Steel Design.** The distinctive face of this gracefully curved City Hall in San Jose, Calif., is all steel and glass. For lasting beauty, porcelain-enameled curtain walls of USS Steel are available in a variety of colors, to brighten the life of any building for decades! Curtain walls: Michel & Pfeffer, Inc., South San Francisco. Contractor: Carl N. Swenson Co., Inc., San Jose, Calif.

Lightens your work  
Brightens your leisure  
Widens your world



Businessmen, school officials and home planners: before you build, consider the design, space- and cost-saving advantages of steel construction. Your architect, working with qualified structural engineers and fabricators, can bring you all these benefits and more when you build with steel!

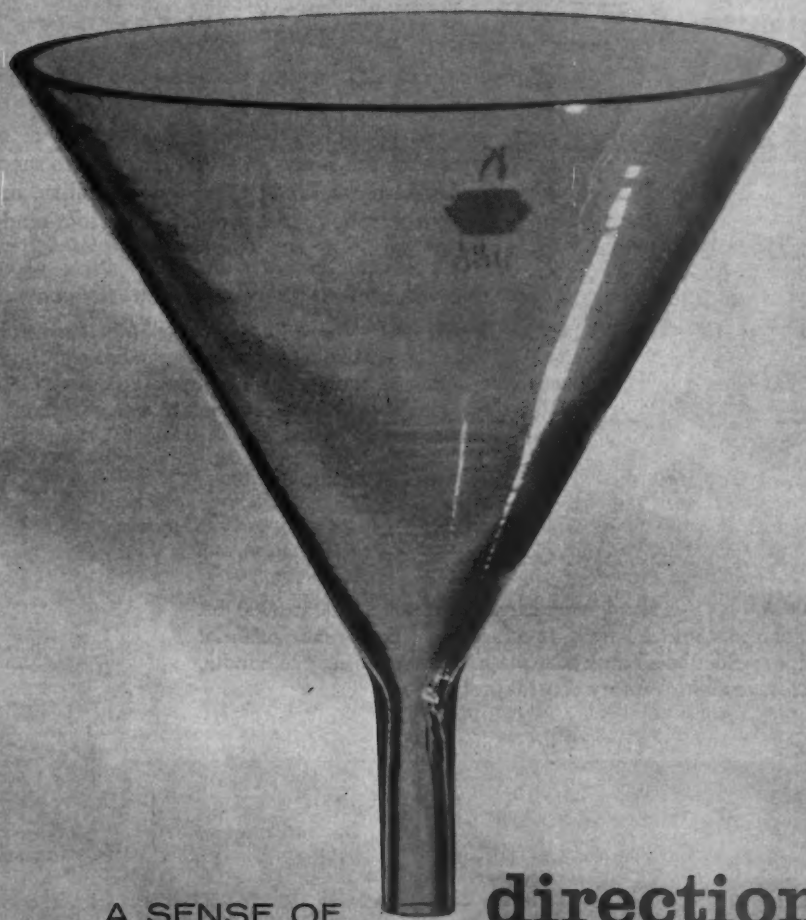
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A SENSE OF **direction**

In the dynamic world of plastics, fast-changing needs determine the many directions of product development. Research is the sixth sense that can anticipate those needs and meet them with raw materials of extremely high purity. Research in petrochemicals is basic to the processing of a select group of hydrocarbons which are, in turn, basic to many intermediates for plastics.

Richfield has long symbolized petroleum progress in the West. Today, Richfield also is synonymous with purity in quantity production of petrochemicals for plastics.

Extremely high purity raw materials for the chemical industry.

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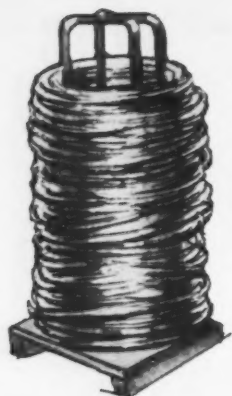
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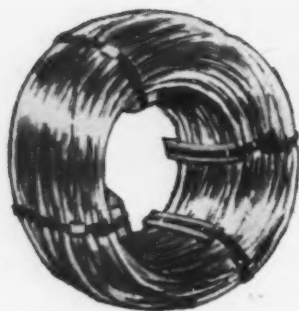
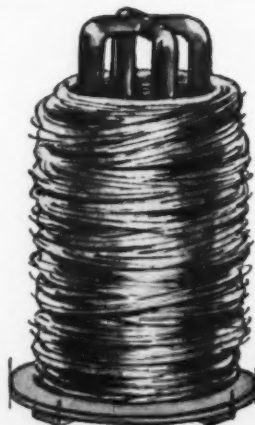


Now you can save time, space and money by using the CF&I wire package best suited for your wire-forming operation. Such modern packaging methods are typical of the many procedures that the Image of CF&I employs to serve his customers. Furthermore, CF&I Wire is top quality, and can be furnished with carbon steel properties custom-made to your needs.

### Choose the Package That Offers You the Most Value

**Disposable Stem-Pak®** — a "throw away" pallet which holds 500 to 1000 lbs. of wire. It holds as much wire in one continuous length as seven standard mill coils. The Stem-Pak has a center core fabricated from wire or rods attached to a wooden base mounted on 4" runners.

**Returnable Spider** — a sturdy wire carrier that holds 2000 to 3000 lbs. of wire in one continuous length. It consists of a center core made of 2" steel pipes welded to a heavy base plate. Spiders are easy to handle, simplify storage and inventory control problems.



**Shaped Coil** — contains 1500 to 2500 lbs. of wire in one continuous length. These coils are bound with four steel straps. When the wire diameter or weight of the coil require it, the steel straps are fixed to wooden supports inside the coil to insure that the coil is not distorted in transit or in-plant handling.

The extra-long lengths of wire on each of these packages will increase your production, reduce machine downtime and help cut scrap loss. When you order wire, contact a CF&I sales representative. He'll be glad to discuss your wire requirements with you and recommend the CF&I wire package that's best for your operation.

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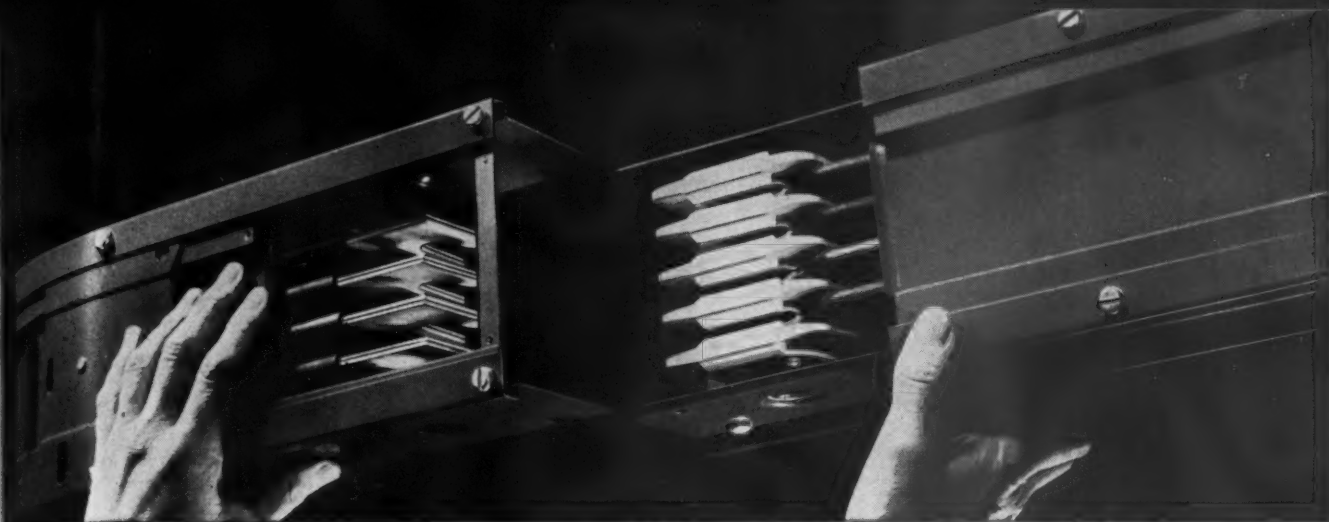
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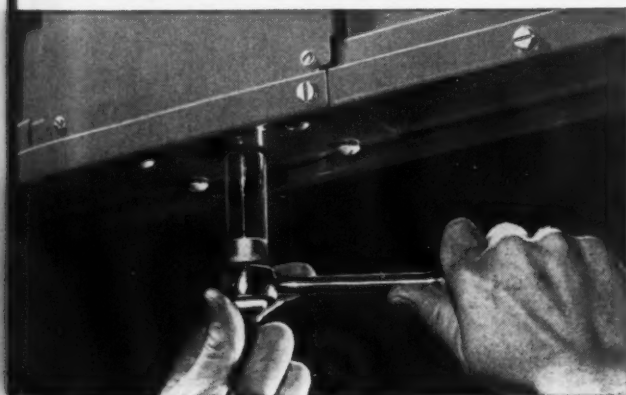
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New XL BUSTribution Duct is 3 ways safer, too. It's the only true dead-front duct, the only one with exclusive Safety Door, the only one with Safety Plug. And it reduces duct weight on building structure as much as 40%. Ask your Bulldog representative to arrange for a demonstration . . . you'll see how fast to install and how safe new XL BUSTribution Duct really is.



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**SINGLE INTEGRAL BOLT** puts a ton of pressure on keyed bus ends. Joints lock tight *fast*, stay locked.



**TEN-FOOT SPANS** take fewer hangers and less time to install than ordinary duct.

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**BULLDOG ELECTRIC PRODUCTS DIVISION  
I-T-E CIRCUIT BREAKER COMPANY**





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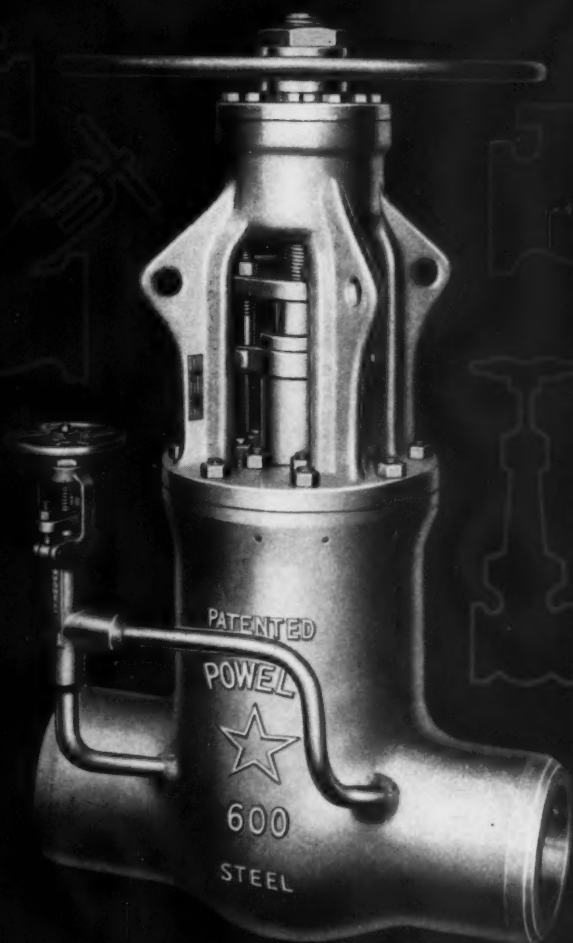
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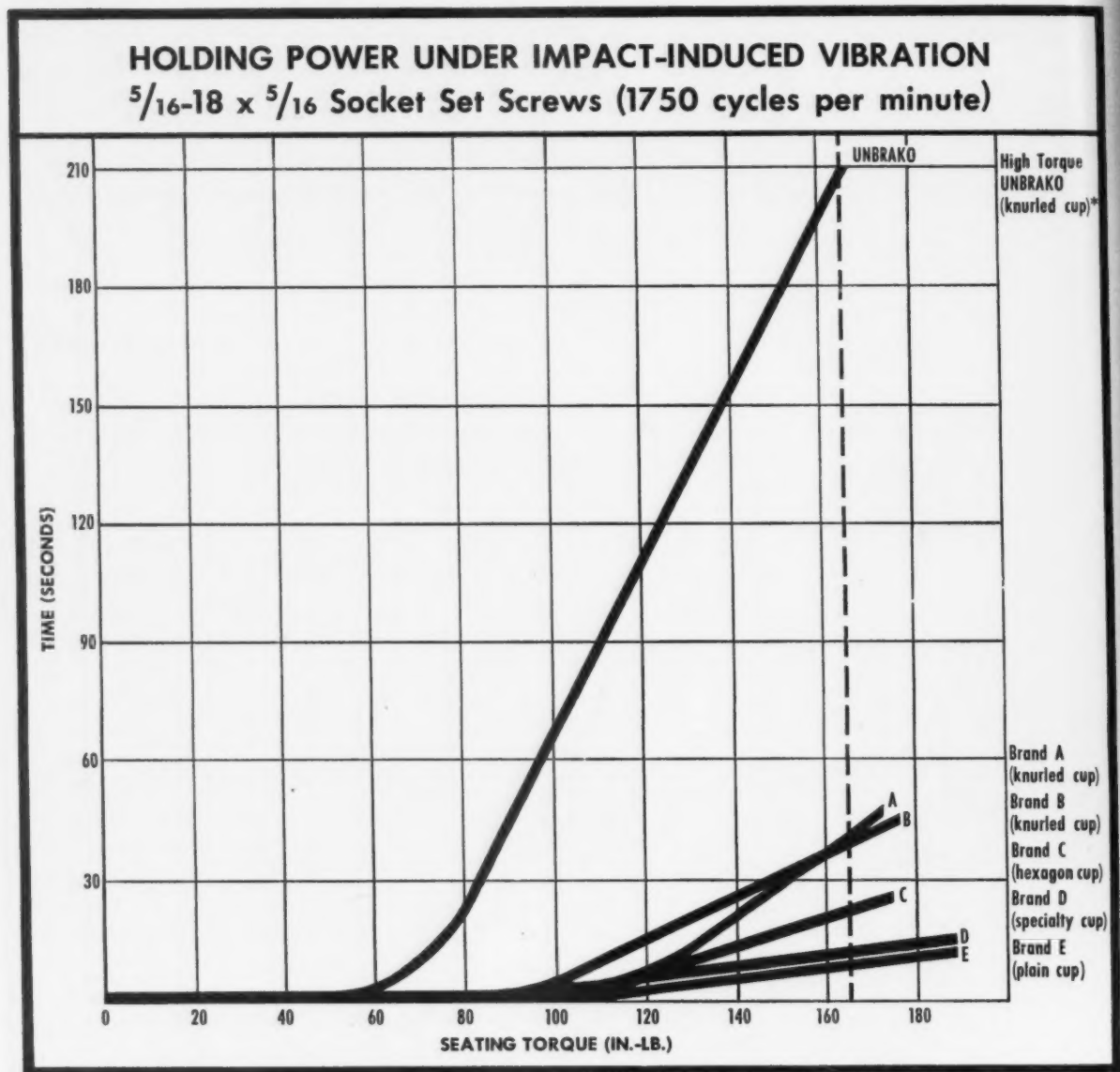
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# STRAPS COILS ON THE DOUBLE



At Gary Steel Supply Co., Chicago, Acme Idea Man Art Hartley (left) views Idea No. S4-11.

Once a slow, laborious manual task, strapping of these slit coils is now a quick, easy operation. With the advent of an Acme Steel F4 Strapping Machine, the slit coil strapping line is completely automated. As a result, coil tying production is not only *doubled*, but manhours are reduced.

Formerly, two men with hand tools could strap only one slit coil per minute. Now just one man straps two per minute. And *every* strap is uniformly tensioned—from first to last.

Your Acme Idea Man is ready to help *you* profitably solve tying or unitizing problems. Call him, or mail the coupon for details.



**IDEA LEADER IN  
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Please send me Idea No. S4-11 and examples of how major companies in my field use Acme Steel Strapping.

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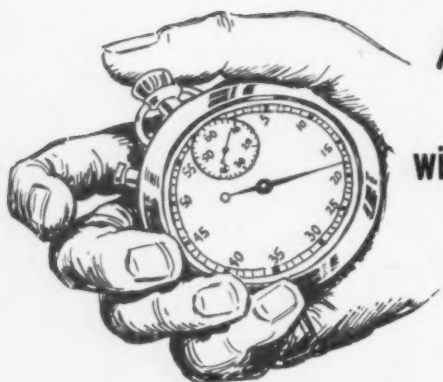
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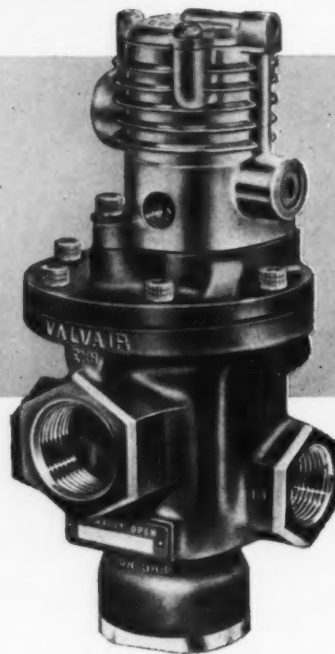
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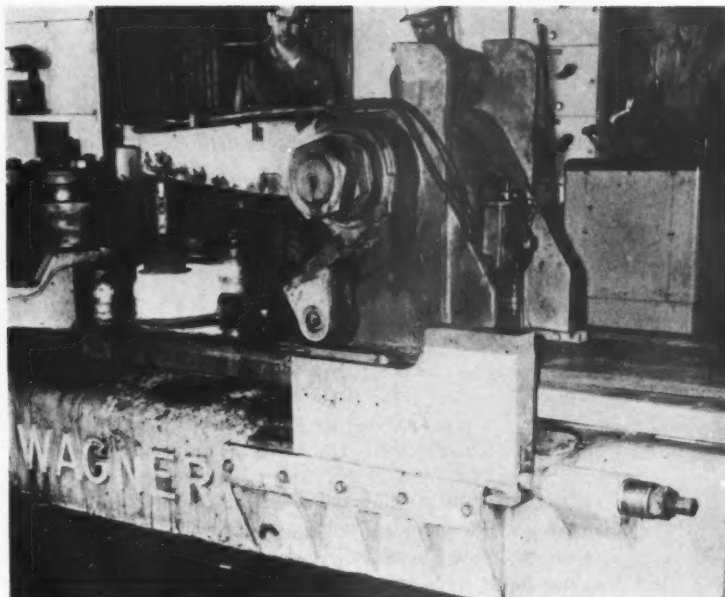
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*MILL IN OPERATION at beginning of operation. Operator at right top center controls only on and off levers. All dimensional requirements are preset and mill automatically disengages when ring is within tolerances.*



## RING ROLLING MILL changes plant production concept

New machine rolls rings so quickly and accurately that support equipment is now key to further production increase.

**A** HUGE RING ROLLING MILL that rolls seamless forged rings has proven such an effective manufacturing tool that it has completely changed the production concept of the forging plant which installed it. Viking Forge and Steel Company, Albany, California, installed this 50-ton ring rolling mill over a year ago. Since that time the machine has not only revolutionized their production of rings, but it has necessitated the installation of a new furnace and a large Bullard vertical boring mill. Production problems are completely changed. They lie not in the ring rolling mill itself but in the support equipment necessary to provide the blanks for the mill. Ring production has increased 500%.

Rings from 12-in. diameter to 55-in. diameter can be rolled on the machine. While feasible to roll rings in one pass, Viking has found it to be more practical in many cases to use two passes. The roughing stage distributes the material to fill the cavity. The final pass rolls the material to the desired configuration.

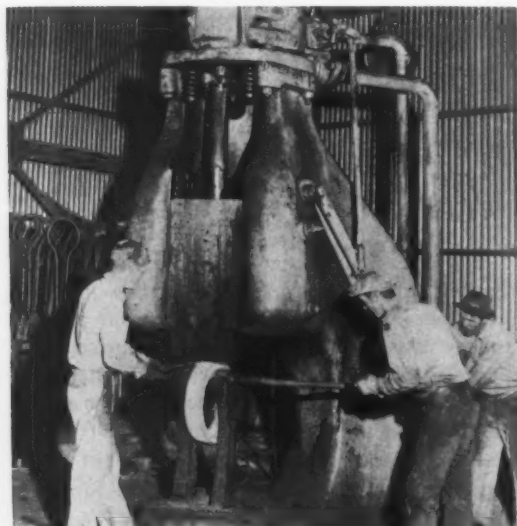
Rolling time per ring runs from 45 to 60 seconds depending upon ring size. Ring diameter can be expanded roughly 20 inches in 45 seconds. Rings are rolled to much closer tolerances than previously was possible. For instance, contour can be rolled round within 1/16 in. for smaller rings and 1/8 in. for large rings. By the hammer method formerly used, ring



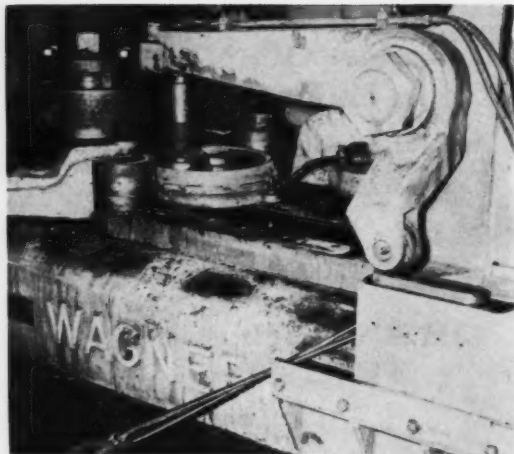
**THREE STAGES** of processing stainless steel complex ring; rough billet, hammered unit prior to mill operation and finished product with complex contours on ID and OD.

contour could be out as much as  $\frac{1}{2}$  in.

The mill was built for Viking by Wagner & Co., Dortmund, Germany, and is the only one of its kind in the Western Hemisphere. Only  $\frac{1}{3}$  of the machine rests at floor level, the other  $\frac{2}{3}$  being submerged in a pit. Much of the machine including pressure on the mandrel and the rounding rollers is hydraulic. Pressure on the rolling mandrel is a controllable feature. Size control is by a limit switch which is set up to bypass hydraulic pressure when the correct size is



**HAMMER METHOD** of forming a ring. Prior to the installation of the ring rolling mill this is how Viking manufactured steel rings.



**MILL OPERATION** at end of cycle with ring still in contact with both contour tools and "feeler arm" that detects any circumferential irregularities in operating position.

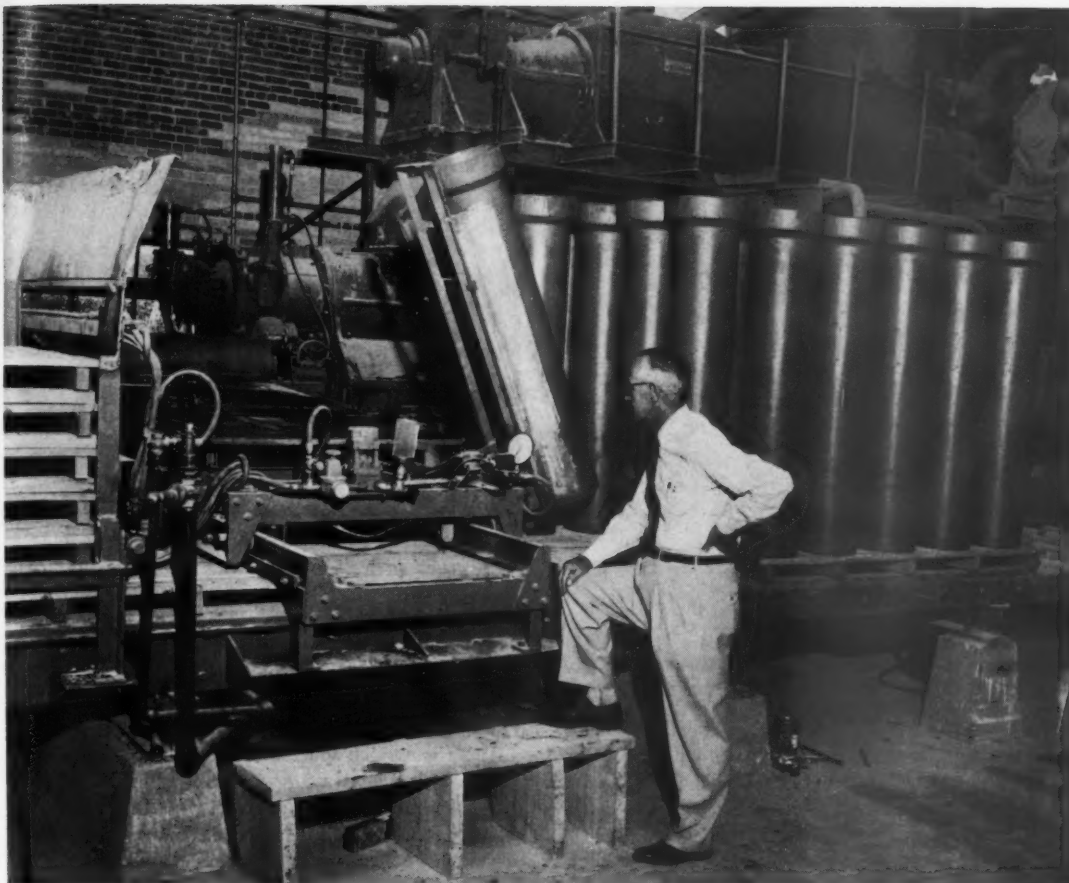
reached. The rolling head is powered by an electric motor through a geared transmission. The machine is operated by one man at a control stand some distance away.

Of almost as much interest as the rolling mill is the turret forge furnace. The furnace developed by Viking has a capacity of 4000-lb. per hour from cold to 2100 degrees in optimum size blanks, with a thermal input of 6,000,000 BTU/hr. It is divided into two sections each with an opening. As hot blanks are worked from one section, cold ones are loaded in the other section. When the first section is empty the furnace rotates 180 degrees and the process is repeated. The furnace has increased the heating capacity for blanks some 400%.

A very good example of how this ring rolling mill has altered plant production concepts is found in one of the rings made by Viking, a contoured stainless steel ring used in missile application. Using special tooling, a mandrel adapter for the ID and an intermediate contour piece for the OD, the required contour can now be rolled into the ring. Formerly it was necessary to start with a rectangular ring and machine the contoured shape.

A 6-in. stainless billet is cut per weight. It is then heated, upset, pierced and hammer mandrelled to an internal diameter large enough to allow the ring blank to slip over the contoured mandrel. The finished ring has a rough turn dimension of  $22\frac{3}{4}$  in. on the OD,  $19\frac{1}{2}$  in. on the ID, and  $2\frac{1}{2}$  in. width.

The ring previously required 95-100 lbs. of gross weight of steel. After it was made in a rectangular shape it was contour machined by the customer. Under the new method two contoured rings are rolled from one blank. On completion the blank is placed on a Bullard and parted in the center. Gross weight of steel needed for the blank that makes two parts is 100 lbs. This represents a considerable savings both in time and material.



*CLAY PIPE is automatically loaded on pallet. In background is pipe extrusion machine. Slightly in front of machine another pipe is being trued. It will be reamed and cleaned at a second station and roll onto pipe tipping device for stacking. Note pallet storage, left foreground, and pallet, at right, already loaded with pipe and ready for pick up by fork lift truck.*

## AUTOMATIC HANDLING of clay pipe speeds production

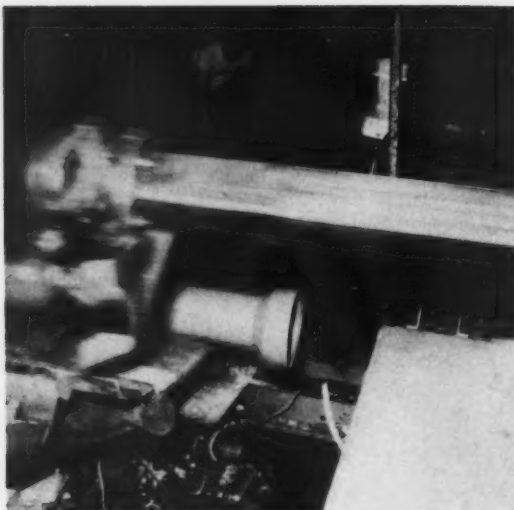
Extruded pipe is trued, reamed, cleaned and continuously stacked on pallets. Process is automatic.

**I**N THE MANUFACTURE of clay pipe much of the cost involved is in the handling of the product, which is large, bulky and relatively inexpensive in relation to its weight. The Denver Brick and Pipe Company, Denver, Colorado, has reduced considerably the handling of their three most widely used sizes of pipe by combining automatic pallet loading equipment with a horizontal pipe extrusion machine.

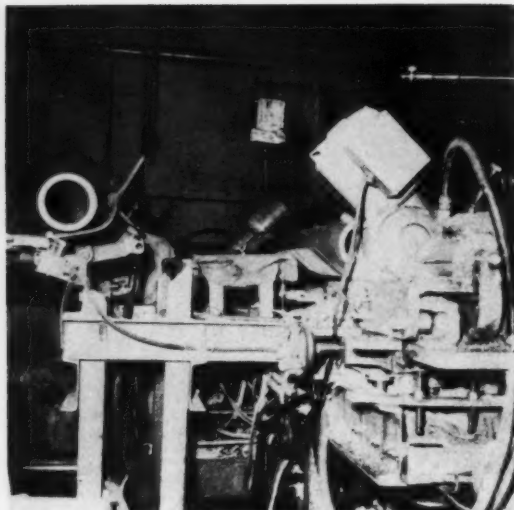
This J. C. Steele Co. horizontal pipe extrusion machine automatically extrudes four, six and eight inch diameter pipe in four foot lengths and cuts them to length. As they are extruded an arm comes up from the platform to support the pipe and after it is

cut, lowers the pipe to the platform. Since the platform is inclined the pipe rolls to a well where cutters come in from either side. They true both ends and ream the pipe. The well tips up on one side, automatically by compressed air, allowing the pipe to roll to a second well. Here compressed air cleans the pipe and blows out any fragments of loose clay left from the reaming operation. The second well tips up, allowing the pipe to roll to the pallet loading rack.

The pallet loading rack is a roller conveyor, rectangular in shape and parallel to the pipe extrusion machine. Pallets are stacked at the rear and as they are needed the bottom pallet is slowly pushed out



*Clay pipe in process of being extruded from machine. When extrusion is complete it will be held by arm, cut and lowered to inclined platform.*



*SIDE VIEW of inclined platform. At right pipe is being trued in well. At left well is tipping pipe onto inclined platform. This is station where pipe was reamed and cleaned. It will roll to loading well.*

automatically to make a continuous line of pallets on the rollers. The hydraulic pallet loading device consists of a third well into which the pipe rolls after it leaves the cleaning well. The weight of the pipe triggers a mechanism that causes the entire well to raise on its end placing the pipe upright on the pallet. The well retracts to await the next pipe. It is then indexed over a set distance so that the next pipe will continue the row on the pallet. When the device reaches the end of the row it automatically indexes to start a new row. At the same time a hydraulic piston pushes the line of pallets forward the exact space needed to start a new row for that size of pipe.

Thus pallets are filled continuously without a break.

There is enough space on the rack for several filled pallets. This allows a time flexibility on their removal from the rack. Pallets are removed from the rack using a Truckman fork lift truck. The truck operator places a wooden cover brace over the top of the upended pipe to keep individual pieces from falling when transported. In addition to forks the lift truck has an attachment that is lowered over the top of the load for stability. The pallet is then removed from the rack and transported to the next operation where it is stored on the floor awaiting use.



*LOADING PIPE on pallet. When clay pipe reaches loading well it automatically tilts up correctly positioning pipe on pallet.*



*REMOVING PALLETs from platform is done by fork lift truck with special attachment on top to provide stability to load.*



## SECURITY SYSTEM provides total protection

Centralized system gives alert  
for nine different emergencies

**O**NE OF THE BASIC DIFFICULTIES of Western industrial plant security is that despite efforts of alert personnel, immediate spotting of most emergencies is impossible unless the guard or maintenance worker is there when it happens.

The situation is complicated in many Western plants that are spread over large areas and contain numerous decentralized structures.

In the past, fire detection, water flow supervision, equipment monitoring, prevention of tampering, pilferage and illegal entry have, for the most part, been controlled visually. After detection and before calls for assistance were made it was often too late to prevent damage or property loss.

To make this type of plant supervision more efficient and to allow a single operator to check on hundreds of danger points at one time, Teletronic Security Systems Inc., Los Angeles, has developed a centralized electronic control system that pipes 9 basic types of emergency signals into one console. Many responses are fully automatic.

Among these can be burglary and holdup alarms, sprinkler system monitors, tampering signals, fire and smoke alarms, industrial telemetering and equipment monitoring. Other man-controlled features can include paging, emergency phone service and air raid or emergency evacuation instructions.

This check station can automatically supervise heating systems, sumps, power supplies and can detect radiation or gas leaks, pressure, temperature and liquid level malfunctions.

Disturbance of any of the above functions, supervised by a detecting element made by any manufac-



*PERMANENT RECORD is made on tape, sample of which is shown above, of every signal transmitted through security system. Record gives time, location and type of report. Thus P 4:12 5A18 on tape means 4:12 P.M., building 5, station 18.*

turer, will result in transmission of an alarm signal to the operator seated at the main control panel. The system can record any or all of the security or maintenance problems within 80 milliseconds of each other. In other words ten alarms can be indicated on the board in 8/10 of one second.

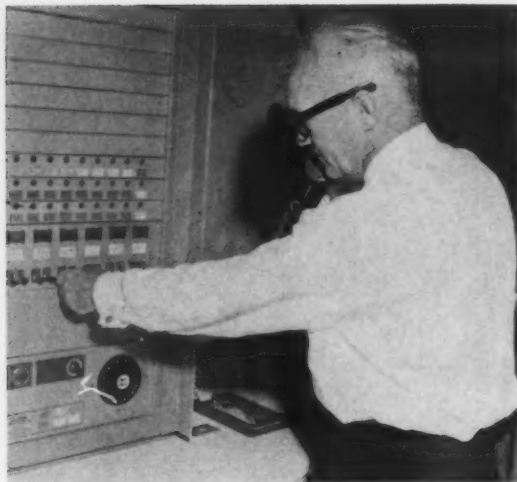
According to Emmett Ward, Teletronic chief engineer, basic headache in most plant security systems is the cost of telephone equipment and cabling between protected areas and the headquarters.

Ward points out that the Teletronic system pipes 1250 protection circuits across a single telephone line and into the console.

A typical installation is being made this month at Thompson Ramo Wooldridge, Inc., Canoga Park, Calif.

A control panel is being installed in each of six buildings at the facility. A master control panel is located in the main building and monitors all other installations.

The unit not only shows location, but identifies the type of trouble via lighted signal message that indicates if it is a fire, security, or maintenance emergency. Lights are coupled with an audible alarm to



*AT MAIN CONTROL PANEL, Emmett Ward snaps off warning light after checking out system via telephone. Button to left of phone dial is audible signal squelch. Switch is for evacuation signal.*



*CONVERSATION BETWEEN SIMULATED guard station and main control board shows use of portable handset by man, rear. Phone service is completely independent of commercial lines.*

command attention. This can be squelched by the operator at will.

A permanent printed record is made on tape of every signal transmitted through the system giving time, location and type of report.

Ward indicates that the Teletronic system will supplant the old time clock used for many years by Western industry to insure the fact that guards adhere to pre-determined routes. Formerly violations of the schedule would not reach security management until review of the time clock tape the following day.

At Ramo Wooldridge a guard can activate a visual signal on the master control console as soon as he visits the appointed station. Each man will be equipped with a 5 AW 3 light-weight Western Electric handset and can plug it in any number of strategically located phone jacks if a call to headquarters is needed.

On the other hand, guards can be paged by response to signal lights located on their beat.

Power for the system is supplied by rectification of existing 115V, 50-60 cycle single phase current into 48 volt DC. Standby batteries and a floating charge system provide emergency power in event of main line failure.



*AREA CONTROL PANEL is installed in one of buildings under protection. Note key-lock system for each of the responses. If key is withdrawn, the function is no longer protected and will not register on signal board.*



*EACH SIGNAL ACCEPTED by system is indicated on tape read out that records in the following manners P 4:12 5A 18 (4:12 p.m., building 5A, station 18).*

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# PHOTO HIGHLIGHTS

## 1960 Western Packaging and Materials Handling Show

THE THREE DAY Western Packaging and Materials Handling Show at Los Angeles Pan Pacific Auditorium set a record attendance of 10,200. Although strict screening of registrants was expected to trim overall attendance, this was not the case. The 173 exhibitors were in general enthusiastic over the interest shown their products by visitors. Pictured here are some of the sights seen at the Show.



*FOR BULKY CARTONS, Ray Vilas, Acme Steel Strapping, uses an A4 pneumatic strapping machine. Strap is automatically fed around box. Operator does not have to leave upright position to operate machine.*



*GERRARD SERIES 2310 strapbinder is demonstrated by H. C. Diefenderfer, A. J. Gerrard Sales Manager, who tensions strapping with pneumatic machine at over 5-in. per second.*



*HIGH SPEED SEALING MACHINE for bags is explained by Marshal Barnes of Bemis Bros. Bag Co. Unit is used for closing paper and cellophane bags with a pasted, flat top seal at 75 bags per minute.*



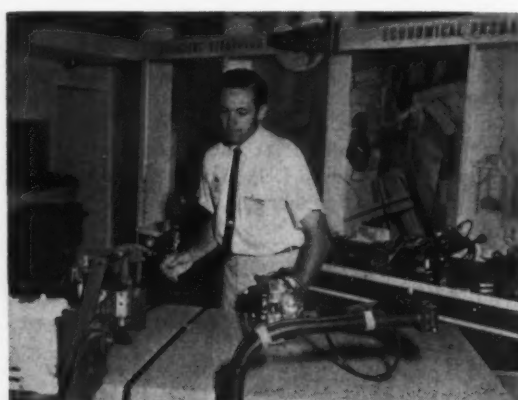
*DEMONSTRATION DIALOGUE* is piped to visitors through phones as Pat O'Louhy shows absorbency and other qualities of Kimpak material made by Kimberly-Clark.



*VISITORS TO INTERNATIONAL PAPER* booth were given chair ride demonstration tour that took them through multiple exhibits while seated and listening to description through earphones.



*TRIO OF REPRESENTATIVES* greeted visitors to the West Virginia Pulp & Paper booth. From left, J. E. Addicott, R. J. Gigler, and Lyman Lee.



*DEMONSTRATING RAPID STRAPPING* of larger cartons, David Code, Signode Strapping, uses a model PSF strapper.

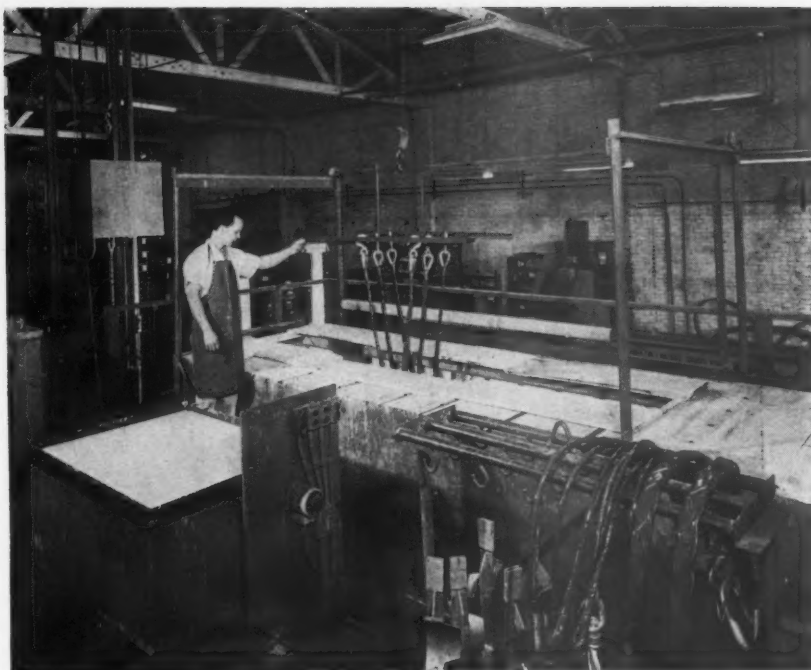


*LIQUID WAX POURS FROM FIBREFLO* container demonstrated by Ken Burgi, Los Angeles Div., Fibre-board Paper Products Corp. Box supplants glass, metal, is collapsible and can hold acids as well as non-caustic liquid.



*DISCUSSING WEYERHAEUSER PLY-VENEER* container and Klimp fasteners is Don Southwick, Los Angeles district representative, left, and Morgan King, manager, Southern Div., Sierra Skyline Inc., El Monte, Calif.

→  
**OPERATOR STEADIES  
FIXTURE** suspended from  
overhead crane as coated  
slings are lowered into con-  
vection furnace for curing at  
about 375 degrees F. Left  
foreground is vat holding liq-  
uid polyvinyl chloride com-  
pound.



## WIRE SLINGS plastic coated to stop marring

Process is used to provide product capable of heavy  
duty handling of finely finished or close tolerance  
assemblies.

**U**SE OF WIRE ROPE for heavy duty material  
handling in the past has presented a problem  
when loads had to be lifted with a minimum  
of galling or marking, especially when objects moved  
were assemblies with close tolerances or fine exterior  
finish.

Other problem areas involved use with corrosive  
materials or where explosive conditions were threat-  
ened by sparks struck from metal slings or rigging.

For these applications wire rope users formerly had  
to depend on marlin-clad rope, consisting of a hemp  
sheath covering wire strands. Cloth, rubber hose,  
wooden blocks and a host of makeshift items were  
pressed into service to prevent marring of surfaces  
or to curb sparks.

To meet this need for a tough, wear, acid and spark  
resistant coating for protective wire rope products,  
Pacific Wire Rope Co., Los Angeles, has developed  
a process to coat a wide range of handling devices  
with a polyvinyl chloride sheath called Pacoat.

This is applied by immersing a pre-heated wire rope  
assembly into a reservoir holding a polyvinyl chloride  
solution. One application is sufficient to create ap-  
proximately 1/16-in. of coating.

Coated wire is then lowered into a natural gas-fired  
convection oven for curing at 375 degrees F.

For extra long assemblies, a tower mounted infra-  
red oven surrounds the wire that is suspended from  
overhead. The oven is moved in increments up or  
down the rope until curing is accomplished.

Pacoat treated wire can be returned after use in  
the field and a new sheath of plastic applied. Removal  
of the worn coating is done by simply overheating the  
assembly and hand stripping the plastic. No solvents  
or special tools are required.

Typical applications of this coated wire have been  
for handling aircraft and missile components, auto-  
motive assemblies, large machined castings and assem-  
blies with delicate finishes.

Other uses include level indicator lines for acid  
tanks, special ropes for underwater rigging and slings  
for handling of finished lumber to prevent scrap loss  
due to crushed and splintered footage.

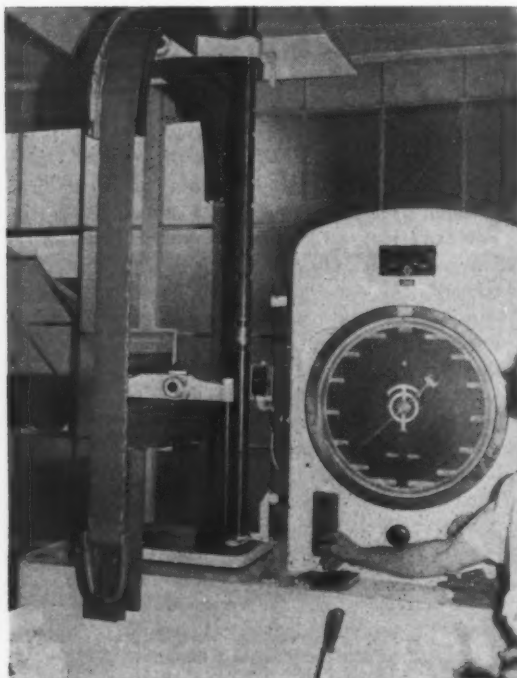
Typical of special items developed at Pacific is a  
missile handling sling consisting of multiple strands of  
Pacoat treated wire rope made from 32 pieces of 1/8-  
in. galvanized aircraft type cable. The sling is of a  
basket type having bails made of heat treated steel.



*PARTIALLY IMMERSSED MISSILE SLING is withdrawn from vat to show surface and texture of Pacoat.*



*MISSILE SLING IS HUNG inside of furnace. After door is closed, furnace rides up and down rails to cure Pacoat sheath.*



*MISSILE SLING UNDERGOES TORTURE TEST in specially built fixture linked to Tinius Olsen tensile strength instrument. Item in rig has proof strength of 24,000 lbs.*

The items were designed for a working load of 12,000 lbs. and were proof loaded to 24,000 lbs. in a basket hitch testing apparatus calibrated by a Tinius Olsen test machine. The sling was draped over a Pacific-built proof load fixture, the bails hooked into lugs at the bottom of each side of the rig and tested to failure at 52,400 lbs.

Since the sling would lift a missile with a relatively soft close tolerance skin, a transparent green-colored Pacoat sheath was applied over the entire contacting surface.

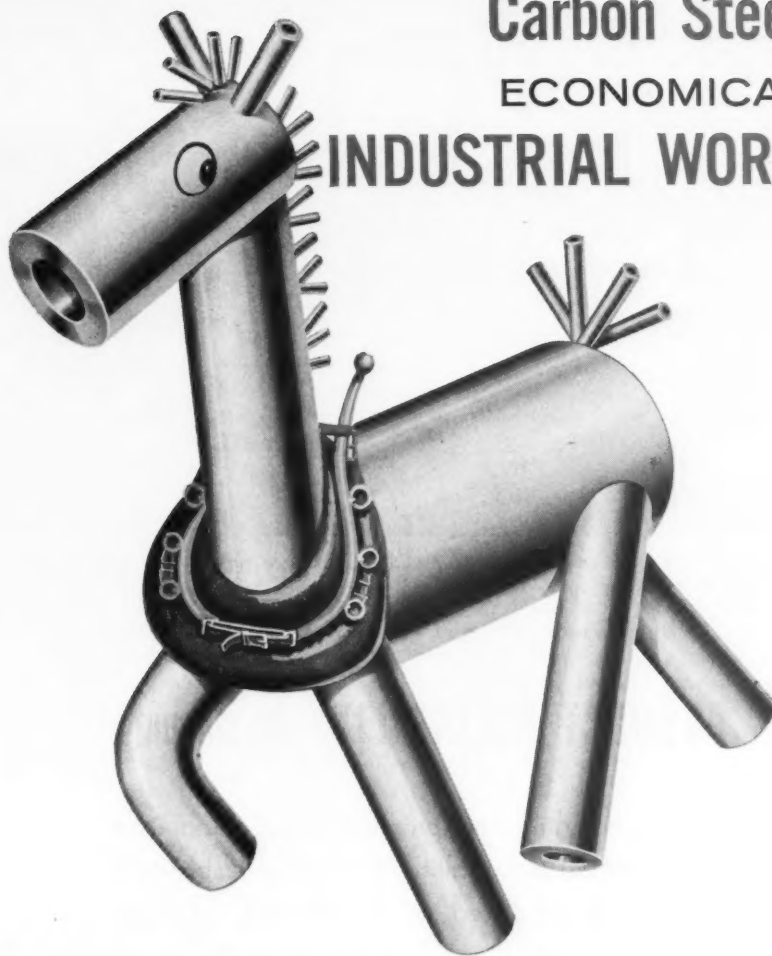
A sling treated in this manner has a number of valuable properties in addition to protective value. It can be used with media containing most acids, salts, oils and greases with exception of hydro-fluoric acid, methyl ethyl ketone or acetone. It is ideal for handling volatile and explosive items.

It can take a wide range of temperatures between minus 30 degrees F. and 140 degrees F. and can be flexed when extremely cold and will not soften when extremely hot.

With a tensile strength of 2600 psi and a modulus of elasticity of 1400 psi, Pacoat has found wide use in wire rope products covered by MIL-specs that also require resistance to salt spray, corrosion and fungus.

The substance may be applied in the same manner to items other than wire rope, such as ground support equipment, pipe racks, aluminum sheet racks and numerous stainless steel, aluminum or metal assemblies capable of withstanding curing temperatures.

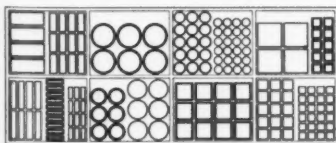




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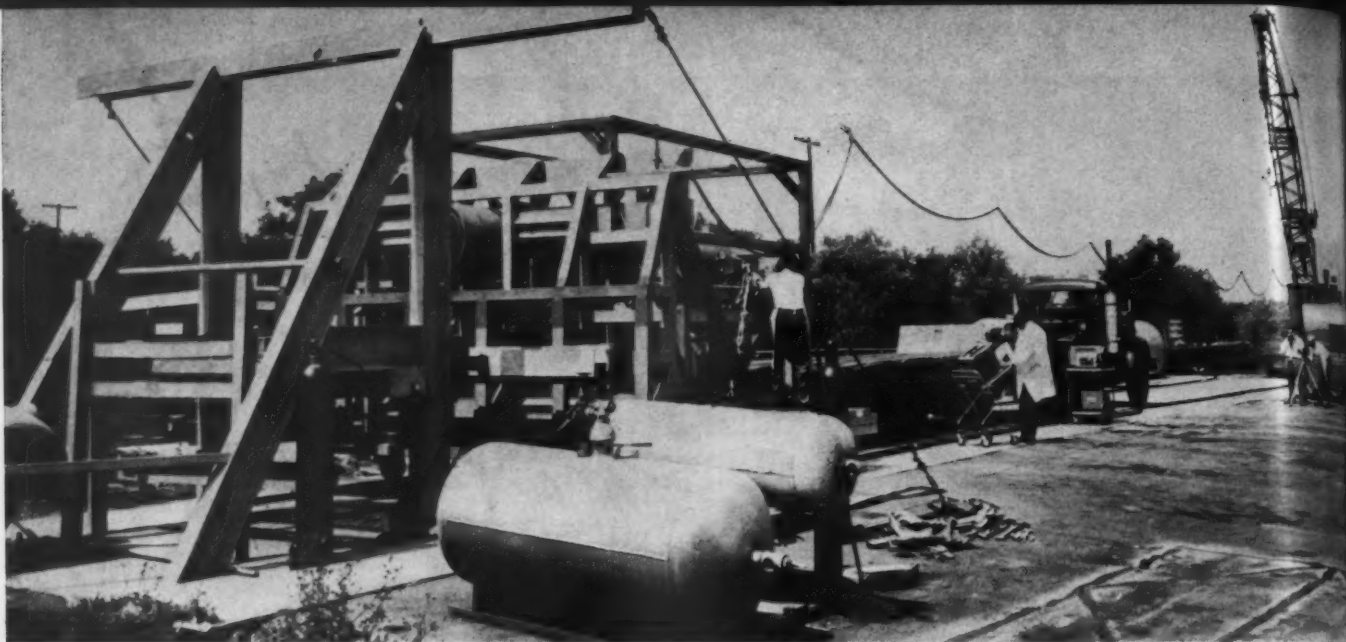


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*RAILROAD OR TRUCK-HUMP test conditions producing package failure are repeated on this horizontal shock tower. Here a 40-ft. low-bed trailer is backed into position for hump testing.*

## PRODUCT RELIABILITY in shipping

Proper packaging and proper product design are needed to insure reliability in shipping. Laboratory tests should be based on consideration of both.

**L**ONG AN INDUSTRIAL STEPCHILD, proper product design and packaging to insure reliability despite the rigours of handling is getting closer scrutiny by Western firms. They have found that no matter how fine a product is as it leaves the final assembly area, it may reach the customer in damaged or inoperable condition.

Last year a west coast manufacturer of commercial tape recorders introduced a new line and evaluated his unit in regard to performance and competitive quality. His product was considered first rate in the laboratory.

But after six weeks of shipments he was deluged with complaints that his sets were damaged on arrival. They would not operate after unpacking.

Despite detailed testing he had overlooked the handling and packaging environment that, as in many cases, proved more severe than his operational design was fit to cope with.

To find the weakness the manufacturer called in American Laboratories, a Fullerton, Calif., packaging and product testing facility. His tape machine was subjected to an intense vibration program, not only primarily to duplicate material handling or packaging conditions, but also to spot structural problems.

The set was cycled from 5 to 60 times at increasing

levels of vibration amplitude. After ten minutes of testing, perhaps equivalent to several days of handling on shipping docks and in trucks, a number of major mounting screws were loosening. This allowed misalignment of the entire assembly.

A newly specified torque range value and addition of glyptol to prevent loosening of fasteners solved the problem.

Believing that a consideration of product reliability must be reached in the light of the sum total of all design, manufacturing, and packaging steps, William H. Grumet, American Laboratories general manager, claims that it is still standard practice in industry to consider each phase of a product's existence as a separate problem.

Grumet claims that in most cases the design engineer does not consult with the packaging engineer. Here reliability suffers, testing programs overlap and products are under or over-designed to meet faulty criteria.

This is in part due to loose specifications, but primarily to the fact that industry does not determine exact capabilities of material and equipment in order to design just beyond application requirements.

Grumet points out that most containers, packages, and material handling devices stress an undue safety

factor that results in far more expense than needed.

In the past six months American Laboratories has tested numerous pallets, crates, and packages that were oversized by a factor of at least five times.

Material handling equipment manufacturers, Grumet believes, are plagued with this problem also.

In shock test programs at American Laboratories a number of standard fork trucks have been used to handle test packages and containers. From a control point of view the amount of shock and vibration transmitted from the fork truck or handling device to the package had to be determined under normal operations.

According to Grumet, repeated inquiries to most manufacturers showed that they had little or no data on the effect of the units on items handled.

Although Grumet feels that concepts pursued at the laboratory are not "strategically new" and may be considered quite obvious, they have not been aggressively sold or followed by industry.

This would be true of common sense manufacturing methods that would avoid underdesign of a product or package or overdesign that boosts production costs for unneeded protection.

He pointed to recent testing of a fibreglas main mast support used by a boat manufacturer. A curious staff engineer felt that he might be overdesigning this support since he had never received a complaint of failure after shipment.

Accelerometers and other testing devices proved the support was oversized by a factor of five-to-

one and approximate savings after redesign this year will amount to more than \$100,000.

At the Fullerton facility an intense program can be set up to provide concentrated testing to produce or graphically illustrate weak points in product or package that might not show up for long periods of time.

In 50 hours lab time, 5 years of ocean shipment can be duplicated with all the destructive elements of dampness and salt spray. This is accomplished in an environmental test chamber some 37-ft. long. In 10 days the chamber can produce six months of simulated rain and humidity.

Sand, dust, tremendous heat, sun damage and fungus can be duplicated. It is here that packaging materials may run the gauntlet of tests only to fall down in one area that might preclude their shipment to certain geographic areas.

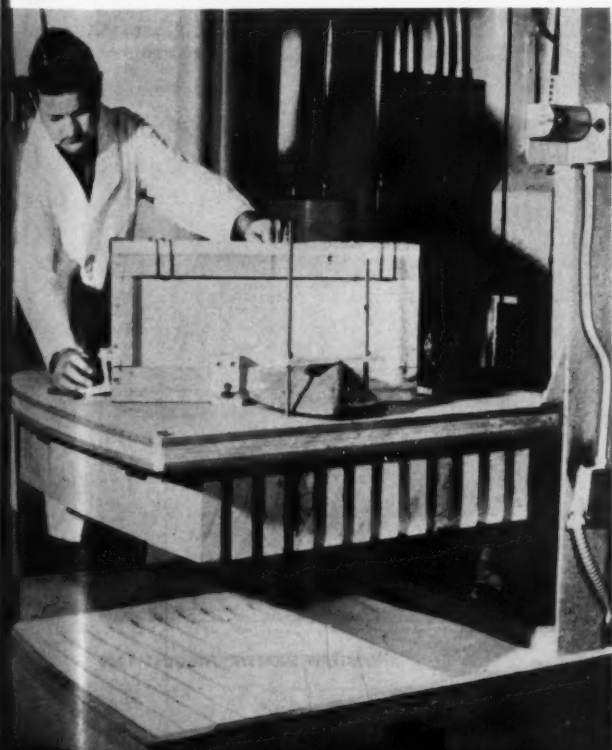
Tested recently was a new type of packaging material that exhibited excellent characteristics with regard to overall strength and wear resistance. But it proved highly susceptible to fungus attack and the lab concluded that any shipment to a semi-tropical climate had to be ruled out.

Other tests carried out include packaging failure due to shock during railroad or truck humping operations. This is performed on a horizontal shock tower capable of handling large tractor trailer rigs.

Also packaging and product drop tests are carried on in a sand drop shock tower capable of producing decelerations up to 120 g repeatable in from 5 to 30 milliseconds.

**PACKAGING AND PRODUCT DROP TESTS** are performed on this sand drop shock tower. When released, platform holding test package plunges to sand pit below. Test might simulate a box taking a tumble from a tail gate.

**PRYING OFF KLIMP FASTENER** on new type of package, technician works in freezing cold produced in this 37 by 15 by 13-ft. environmental test chamber. Fungus, rain, dust, sand, humidity, salt spray and heat up to 200 degrees F. are duplicated here.



## RECORD SYSTEM

### proves extremely effective

Stock control system has many advantages; could be adopted for other uses.

**A**LL INDUSTRIES need records as a means of effective control. Within the manufacturing framework of a firm, many record systems are kept and constantly consulted. These include: production control records, stock inventory, equipment inventory, maintenance records, and many others.

In large firms where the gathering and upkeep of this information is sizeable, there is a trend towards the use of electronic equipment. However, in the West there are many companies of a smaller size. These smaller firms often cannot economically utilize electronic equipment for their records. In larger companies too there are occasions where electronic equipment is not justified because of the limited size of the records.

Foucar, Ray & Simon, a steel service center, with headquarters in San Francisco, has developed a unique system of stock order control which is extremely interesting and with some changes could be utilized for a number of different control systems. Not only are the records complete but the system is inexpensive, can be used by several persons simultaneously, and is extremely fast and very flexible.

Being a steel service center, Foucar, Ray & Simon is faced with the problem of carrying a large inventory of different items in various sizes and materials. Most of their orders are received over the phone. It is therefore of prime importance that each of their several order takers know immediately the situation concerning the stock on hand for items being ordered.

To solve this problem the firm has designed and



*Top Photo*  
**NICKNAMED "The Tank"** this stock control system contains information on some 4000 items. As shown, individual panels can easily be removed for posting.

*Middle Photo*  
**JOHN LANGER**, Sales Manager Tubing Division, checks a listing from his chair. Average time for locating items is only 10 seconds.

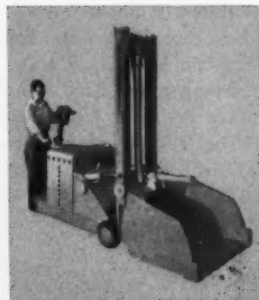
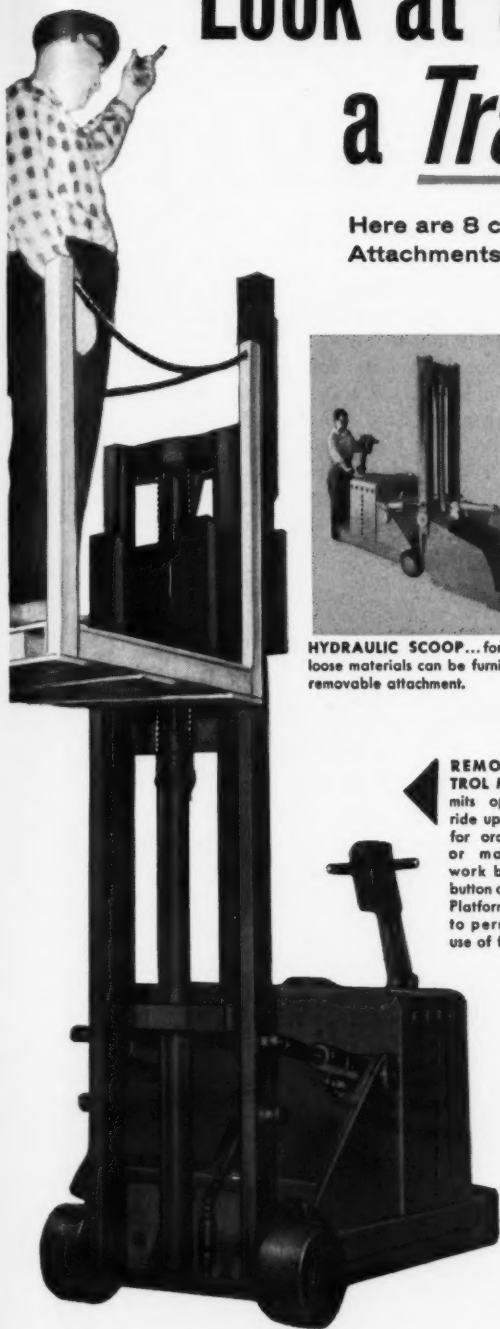
*Bottom Photo*  
**ITEMS** can easily be checked while on the phone. The system is used simultaneously by as many as five persons.



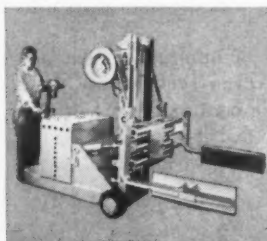
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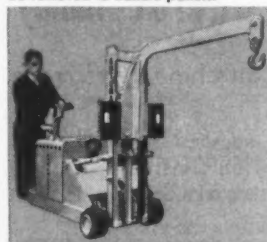


**UTILITY CLAMPING DEVICE...**Clamp arms can be attached to forks for handling cartons, etc. Clamp arms can be removed to handle pallets.

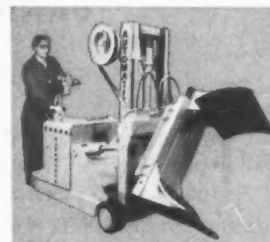


**MECHANICAL GRAVITY DRUM DUMPER...**Removable attachment to fit on forks.

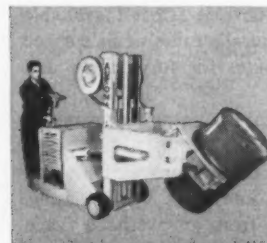
**REMOTE CONTROL MAST** permits operator to ride up and down for order picking or maintenance work by pushing button on carriage. Platform folds back to permit normal use of forks.



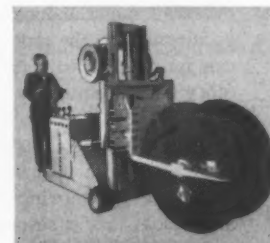
**GOOSENECK CRANE ATTACHMENT...**for items too bulky or too irregular in shape to be palletized.



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had built a device which they call "The Tank." It consists of some 40 vertical panels, each with 100 cards, attached to a drum. The device can be rotated until the desired panel is reached, and has proved so successful that five men seated at desks can use it simultaneously with little hindrance to each other. Only 10 seconds are needed to locate any desired item out of a total of 4000 other items.

Panels are color coded to the four main items the firm handles, cold roll steel, hot roll carbon steel, tubing, alloy steel. Thus, when alloy steel of a certain size is being ordered the order taker rotates "The Tank" to the alloy section and to the correct panel in that section. He then sights down the panel until he finds the exact item card. As an added help, besides containing item's description, each card is marked with a circle colored to correspond with the color code with which that steel is painted.

It is amazing the amount of information that one complete listing contains. Actually there are three cards per item. One full size card and two half size cards. These are arranged so that the underside of the previous item card is used. Thus, when it is lifted up

a complete visual record on one item is seen. One card contains an in-and-out stock balance record with spaces for posting the order number, quantity received, quantity sold, balance, and name. The size and weight per bar is also carried. The other two half cards contain a monthly sales total and a previous years sales total on one, and a mill order schedule on the second. This mill order schedule includes the order number, date, mill, quantity, heat number, when scheduled and when complete. It also contains a heat and car number and a metallurgical analysis of that heat.

On each card a sliding orange tab is used to determine when stock should be reordered on that item. A green sliding tab is also used to determine when the order is due to arrive.

For ease in posting and revision each individual panel can be quickly and easily removed. Not only is posting more rapid, but individual panels may be worked on while "The Tank" is in use.

"The Tank" was engineered several years ago by Sid Diehl, now president of Foucar, Ray and Simon, and has successfully stood the tests of both time and use.

## CRANE DEVICE handy for narrow aisle lifting

Fork attachment for crane solves handling problems

**F**OR MANY WESTERN industrial firms, in-plant storage space is costly, often limited and criss-crossed with access aisles that take up valuable feet of otherwise usable area.

Where aisle space problems can become critical, for example, are in metal storage operations that may already be complicated by size and weight factors. If overhead material handling devices are not available or adaptable to the process, literally miles of aisle space can be devoted to access routes for fork trucks and other mobile equipment.

To cut access aisles to a minimum and to expedite loading and unloading of tree racks filled with sheet items, Earle M. Jorgensen Co., Los Angeles branch, is using a free-moving fork, known as the Sammons Sky Hook, that is suspended from an overhead crane and guided into place by one man.

The C-shaped lifting device is fabricated from structural steel members and has adjustable-width forks that are kept horizontal by counter balancing located in the top of the lift.

The Sky Hook, made by Sammons & Sons, Lynwood, Calif., needs only a narrow 5-ft. aisle and does not require access room as the load may be lifted above the racks and moved to any part of the service center. When the lift is not in use, the crane operator can slide the device into any rack to leave the aisle virtually unblocked.

Even pallets, skids, or bundles of sheet metal may be elevated and moved neatly and rapidly for deposit on a tree rack without disturbing adjacent material.



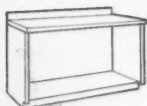
*DEFTLY SLIDING* into tree rack to remove a pile of sheet at Earle M. Jorgensen service center is a 6000-lb. cap. Sammons Sky Hook.

Ship Shape Shops need

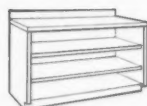


# HALLOWELL

## CABINET BENCHES



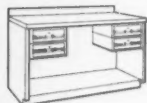
Model 608-Basic Bench



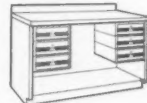
Two adjustable shelves



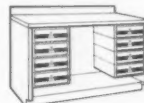
Two shelves, sliding doors and lock



Two 2-drawer tiers



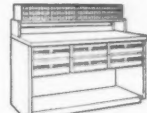
Two 3-drawer tiers



Two 4-drawer tiers



Two shelves and top shelf



Drawer tiers and storage wall



Two shelves, sliding doors and drawer tier



Electrical panel, shelves and sliding doors



Three 2-drawer tier units



Top shelf, shelves and sliding doors

There is a standard HALLOWELL Cabinet Bench for every job. Drawers, doors, electrical panels or test panels, shelves and other interchangeable accessories give you what you need *now*—yet enable you to rearrange or add as work requirements change. Built to last indefinitely. Ask your HALLOWELL distributor for full information, or mail coupon below.

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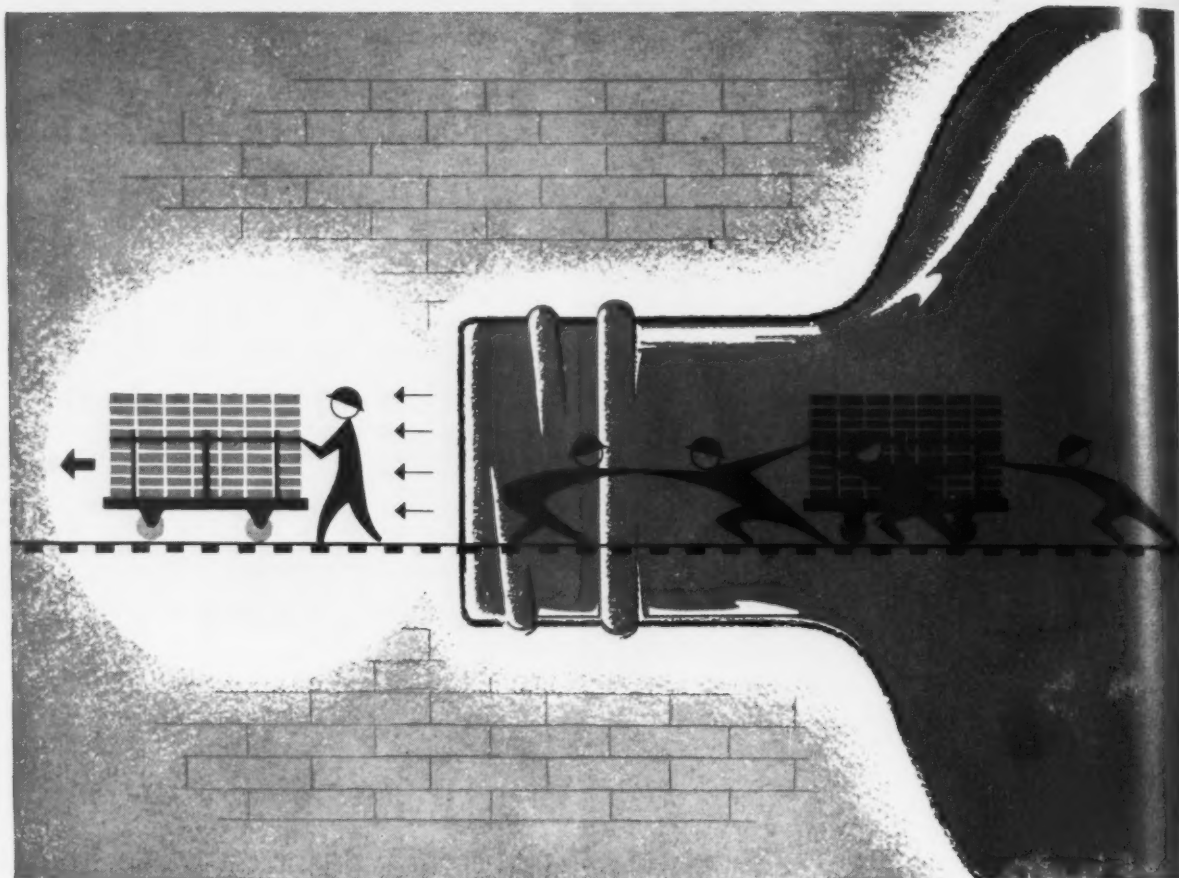
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WESTERN INDUSTRY/AUGUST 1960

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47



## New "hot" grease ends brick-oven bottlenecks ... and one man outperforms four!

Ceramic Combustion & Engineering Company, consultants for the Davidson Brick Co., Los Angeles, California, ran into production bottlenecks while using ordinary grease in dryer-car bearings. Oven temperatures (350° to 400° F.) cooked the grease solid... stalled the cars loaded with bricks in the dryer. Bearings seized so badly that four men were needed to move each carload.

Now—with Shell Darina Grease 2 as the lubricant, Davidson reports: "Bearings roll free, even at 400° F., one man, instead of the four previously required, can *easily* roll a carload of bricks... no more bottlenecks caused by frozen bearings."

Darina® Grease 2 is an economical, multi-purpose grease with exceptional stability in high-temperature applications. It offers these outstanding qualities:

**HIGH-TEMPERATURE PERFORMANCE.** 100° F. better than conventional multi-purpose greases.

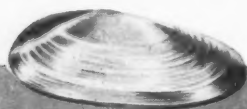
**EFFICIENT SEALING.** Contains no soap—nothing to melt and run out.

**HIGH RESISTANCE TO WATER WASH-OUT.** Doesn't dissolve or separate when mixed with water... lubricates efficiently under wet conditions.

**POSITIVE RUST PROTECTION.** Protects bearings even under severe moisture conditions.

**ECONOMICAL.** Savings up to 35% in grease and labor costs alone are possible because of Darina's superior performance over a wide range of plant operating conditions.

For more information on Darina Grease, write: Shell Oil Company, 50 West 50th St., New York 20, N. Y., or 100 Bush St., San Francisco 6, California. In Canada: Shell Oil Company of Canada, Limited, 505 University Avenue, Toronto 2, Ontario.



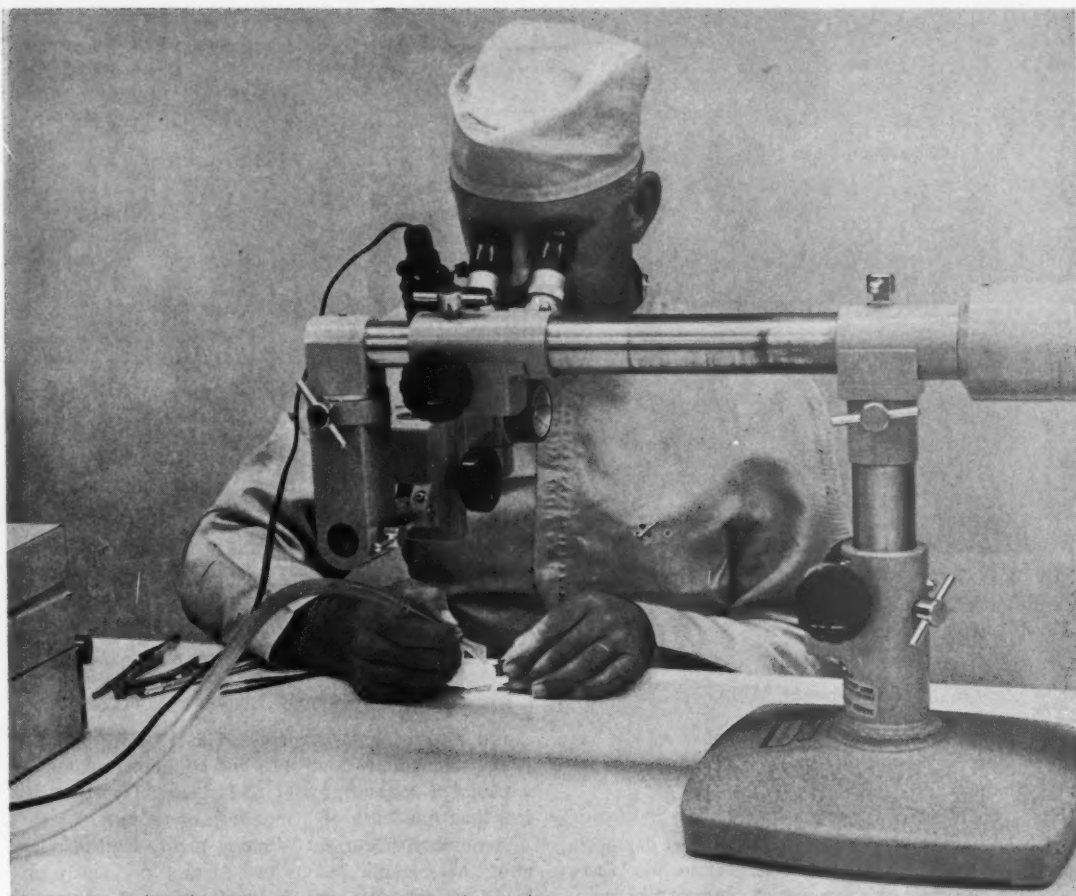
An Interesting Fact! Every Shell Branded Industrial Lubricant is named for a sea shell. Shown here: Darina solenoides.

**SHELL DARINA GREASE**  
*the multi-purpose, high-temperature grease*



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*VACUUM HOSE QUICKLY REMOVES micron-sized particulate matter from tiny guidance assembly. Microscope is used to spot foreign matter that could foul mechanism.*

A SPECIAL

western  
industry

REPORT

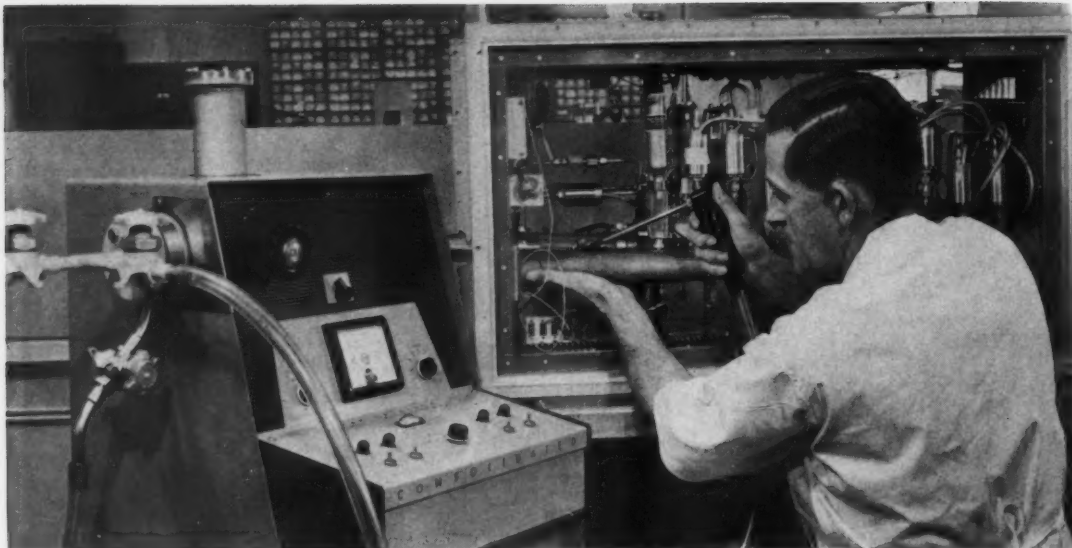
## QUALITY CONTROL AND INSPECTION

Advanced techniques indicate that key Western industries are extremely quality control conscious. From the nature of their products they must remain so.

**Q**UALITY CONTROL and Inspection are extremely important to Western plants. Key Western industries such as aircraft, missiles and electronics are all of a precision nature. The items they manufacture require an extreme amount of inspection and testing to achieve the quality and reliability demanded.

For this reason Western plants are much more conscious of quality control and plant personnel recognize its necessity.

In recent years quality control has become a manufacturing problem as yet unsolved in the rest of the country. In the East there has long been a problem



*HUNDREDS OF POSSIBLE LEAK POINTS must be checked during quality control of this missile sub-assembly that is pressurized. Technician holds sampling probe in right hand while keeping eye on gauge that will indicate leakage of helium gas.*

in workmanship among plant personnel. This has created quality control problems in many manufactured products.

Here, the West is fortunate. Since its key industries must have high quality control to survive, it has been emphasized and constantly stressed. Thus while Western plants have a quality control problem, it lies more in the nature of the product than with plant personnel.

Again because of the nature of its key products, and their constantly increasing close tolerances, the West has become a leader in precision inspection. Its requirements for part precision and cleanliness are in general more exacting than anywhere else in the country. They are and have been increasing in precision at a rapid rate.

At a Conference on Standards and Electronic Measurements held at the Boulder, Colorado, laboratories of the National Bureau of Standards on June 22 of this year, Lloyd B. Wilson, Sperry Gyroscope Co., pointed out that military needs and the space program are requiring accuracies of measurement unheard of a few years ago and which, in some cases, do not exist. In solving some of the problems of measurement in the electronics field the National Bureau of Standards Radio Standards Laboratory has made progress in developing new standards. One of these is a technique for measuring small attenuations to accuracies exceeding one ten-thousandth of a decibel, a microwave standard of power at X-band frequencies which was developed in 1957.

In the measurement of surfaces we have made advances, not only in equipment to produce extremely accurate surfaces but in the equipment necessary to measure the product. Indicative of the problems involved in this area alone, is the formation of a firm in Burbank called Metrolonics Inc. which provides a calibration service to industry in the West using pre-

cision measuring instruments. This firm's laboratory is environmentally controlled and contains instruments capable of measuring flat and spherical surfaces to less than one-tenth of a millionth of an inch.

A number of current Western quality control operations are complicated by two factors, previously unheard of tolerances and the quality control technician himself.

No matter how dedicated or efficient this man may be, when it comes to inspection of gearing, for example, that is machined accurately to 5 arc seconds with flatness and parallelism to  $2\frac{1}{2}$  millionths of an inch, he needs more than steady hands and a good mind.

Quality control of these ultra-precision items is being performed in dust free, humidity and temperature controlled clean rooms like the precision assembly laboratory at Nortronics, Hawthorne, Calif.

Technicians working here must submit themselves to a scrubbing regimen as thorough as that found in most hospital operating rooms. The scrubbed worker must don Dacron overalls, cap and plastic shoes. As a final precaution he enters a "man-cleaner" that sweeps any lingering particulate matter from his clothing with a 35 mph gust of air for 20 seconds duration.

Why the precaution? A surprising number of quality control rejections have been traced to foreign matter of the most unusual nature—nail clippings and polish, face powder, dandruff, eye lashes and fallen hair.

To make sure that no traces of foreign matter enter complex Snark guidance systems under inspection, workers use a miniature bench mounted vacuum cleaning system consisting of vinyl-type, static-proof hose fitted with a flared attachment much like the housewife's vacuum cleaner accessory.

Working under a microscope, the inspector can remove normally invisible matter from guidance com-

ponents prior to their inclusion in the overall assembly.

Power for this vacuum system is supplied by US Hoffman Machinery Corp. with an exhauster unit that is capable of handling a minimum of 610 cfm of air at 6-in. of mercury.

In addition to the bench mounted hoses, the system can operate up to 7 hoses, 1½-in. ID at 70 cfm per hose. These are 25-ft.-long and are used for cleaning particulate matter from lab floors and walls.

Constantly tightening standards of quality control in Western electronic and other precision industries have required use of an accurate, rapid and simple method of leak testing items such as electronic tubes, transducers, and pressurized black boxes. The answer has been the mass spectrometer-type leak detector.

This quality control instrument has proven a versatile performer in precision leak testing. Highly portable, detectors are a refinement of the mass spectrometer which analyzes the composition of numerous materials.

The detector, however, is sensitive only to a tracer gas, generally helium, used because its small concentration in the atmosphere does not interfere with the instrument or the operator. It is not harmful and will not explode. If necessary and with certain modifications, an argon tracer gas may be used.

In practice, gas is sprayed or enclosed on one side of the product in quality control, and this is opposed by vacuum pumps. Any helium that invades the vacuum is drawn into an analyzing chamber in the de-



**CUTAWAY VIEW OF SPECIAL CONTAINER** shows electronic components attached to tray that rides in a container that in turn is containerized. Note rubberized hair, paper and cloth packaging elements.

tor where its concentration is measured.

Sensitivity on certain instruments is sufficient to determine leakage rate so minute that it would take 35 years for one cc of gas to escape at a pressure of 15 psig.

The type 24-110A leak detector, made by Consolidated Electrodynamics Corp., Pasadena, Calif., for example, responds to one part helium in 10 million parts of air.

If the product to be leak checked is a container of some type or is intended to hold vacuum or pressure, it is first filled with helium.

A vacuum is created in a probe connected to the detector. This can be moved to any number of possible leakage points. An audible alarm indicates a leak that is calibrated on a meter. This method is used by Jennings Radio Manufacturing Co., San Jose, Calif., to test vacuum tubes.

Wiancko Engineering Co., Pasadena, Calif., uses a probe to leak check hermetically sealed transducers and pressurized control systems, some of which have hundreds of possible leak points. The test only takes minutes.

Some quality control measures required by contractors and government MIL-specs often call out the maximum allowable leak rate of a component.

In such cases the items are pressurized, generally with a helium mixture, and then are enclosed in an evacuated chamber such as a bell jar. This chamber is purged with vacuum pumps.

If helium seeps through a leak in the component it enters a vacuum line piped directly to the detector and the intensity is measured. If the component itself is evacuated, it is then placed in a plastic bag confining the helium and the test begun.

Parker Seal Co., Culver City, Calif., uses both tech-



**TWO HUNDRED TINY ELECTRONIC DEVICES** undergo testing at one time as component tray is attached to a scanner control unit at Autonetics. Components are checked frequently and results placed on IBM cards. No individual handling is needed.





**TESTED COMPONENTS ARE STORED** in wire racks placed in bins. Checks include 4000 hour tests to establish "wear-out" characteristics of the part.

niques to make sure its seals are properly holding pressure or excluding foreign substances from electronic black boxes.

Walter Kidde & Co., Los Angeles, uses the leak detector to check dry chemical fire extinguishers. The cylinder to be tested is charged to 150 psi with air and 10% helium. It is then placed inside a specially built evacuating chamber connected to the leak detector. Cylinders that do not pass this leak test are set aside for checking by the probe method. This locates the leak and speeds repairs. The company reports a great reduction in quality control time.

A three phase quality control program to insure reliability of delicate electronic parts used at North American Aviation, Autonetics Div., Downey, Calif., involves special handling, packaging and punched card data control.

It was found that resistors, diodes, capacitors and other solid state devices were prone to damage by repeated handling during quality control operations conducted by vendor and purchaser alike.

An electronic part, in the past, might have been fingered a dozen times before its eventual fixturing in a printed circuit board.

To eliminate this problem, Autonetics is requiring such items to be placed in a sandwich-type component tray that will hold up to 200 parts. Trays are made up of a series of plates. The bottom plate is constructed like a printed circuit board and is fitted with connectors that will activate a quality control instrument at Autonetics called the scanner control unit.

At the manufacturers plant, wire leads from the components are shaped to fit printed circuit boards. They are then inserted through holes in the plates and dip soldered to the bottom plate. This joins the leads from the components to the connectors and when the tray is attached to the scanner, up to 200 parts can be

checked for electrical characteristics at one time without handling.

After delivery to Autonetics and initial quality control checks are made, trays are stored in special wire racks that fit into bins.

When devices are needed for installation, the lower plate of the component tray is passed through a hot solder bath allowing it to drop off and to free component leads.

Then for the first time since placement in the tray, a component is handled by an installer who inserts it in a printed circuit board.

For the trip from the vendor's plant to Autonetics, component trays are shipped in special containers designed to protect them from shock, moisture and dust. The container is designed as a package within a package and consists of a complex of paper, cloth and rubberized hair lining.

This shipping container carries with it an IBM card for each of the 200 components therein. During final quality control operations at the manufacturing facility, results of checkouts for each part are recorded on the IBM card. These are collected and packed into a special container built into the carton.

Space is left on the data card for addition of quality control data gathered during subsequent checkouts at Autonetics.

Not restricted to finished components, quality control measures at Downey are going back to basic raw materials and are following each fabrication step. Autonetics suppliers are required to start with materials research and to keep accurate tabs on all manufacturing processes.

Information coded onto IBM cards gives the entire history on a part so that a defect can be traced to the proper source for elimination of the problem.

It is obvious that many vital Western industries must have as their basis for survival an extremely good system of quality control for the items they manufacture. This is only part of the story since sub-contractors supply parts to almost all of the major Western firms. Many of these parts too must meet exacting specifications. It is thus important that the supplier practice a high standard of quality control. As a result a large number of Western firms who deal with sub-contractors are insisting on a quality control inspection of prospective sub-contractor' and suppliers' plants prior to purchasing from them. By this means the firm can compare suppliers, determine production capabilities and spot weak points in quality control that should be corrected before a contract is let. While this quality control survey does not guarantee that purchased parts will meet standards it does provide a measure of assurance that the sub-contractor is capable of doing so.

In the area of quality control and in the use of instruments needed to measure the extreme precision required by much of the industry in the West, advances are coming rapidly and the changes are so apparent that they have set this section of the country apart. Accuracies of a few years past, thought to be limiting, have been surpassed and already present accuracies are becoming obsolete. The problem of quality control is all important in Western production.



# CREATIVE COST CUTTING

Selecting the metal to fit the job can give you surprising savings in total cost



Small spring clips between telescoping parts of auto radio antennas must maintain electrical contact, hold parts firmly, give smooth sliding action. Brach Manufacturing Division of General Bronze Corp., Newark, N. J., found that spring clips of Duraflex®, Anaconda superfine-grain phosphor bronze, gave best positive electrical contact and improved smooth action in Brach Auto Antennas over original clips made of premium metals. The clips stand up in constant use, spot welding and fabrication are easier—and costs are about 25% lower.



In this G-E Automatic Coffee Maker control, a thermostat turns cam actuating switches—for high heat to brew coffee, for low heat to keep it warm. At first, upper switch element was an assembly of blade, bushing, and locking nut. Tinnerman Products Inc., Cleveland, Ohio, engineered a one-piece Speed Clip to replace it—by forming one thread in the blade and two prongs to lock the screw (see inset above). This simplification called for a superior phosphor bronze. Tinnerman found it in Duraflex, Anaconda superfine-grain phosphor bronze. It has higher tensile strength and endurance limit for long-lasting dependability—greater formability for economical manufacture. The result: unit costs were cut—and G-E assembles controls faster, more easily.

Quality control and cost reduction can go hand in hand. The secret is often simply matching the metal to the job. And Anaconda specialists, starting with 93 standard alloys, can offer an almost unlimited number of combinations of useful properties. For creative help, write The American Brass Company, 14900 Garfield Ave., Paramount, Calif. In Canada: Anaconda American Brass Ltd., New Toronto, Ont. 6045PG

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CIRCLE APPROPRIATE KEY NUMBERS ON POSTCARD, P. 70

## FIN-TYPE PIPE RADIATION

Booklet about a line of fintube radiation designed to meet modern heating requirements of commercial, institutional and industrial buildings where maximum heat output is necessary yet where only a minimum amount of space is available. This 22-pager covers advantages, descriptions, complete data. *Crane Co.*

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## CONNECTORS FOR EVERY NEED

Photos and diagrams are used in this colorful brochure to describe in detail all types of multi-contact connectors and their applications. Covers three basic types of standard connectors, each offered in a variety of mounting configurations and number of contacts. *Consolidated Electrodynamics Corp., Electro Mechanical Instrument Div.*

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## CANNED PUMPS

Bulletin discusses features of line of Robbins & Myers canned pumps including no leakage, eliminates contamination, handles pressure or vacuum applications, minimum routine maintenance, easy installation and construction details. A schematic points out construction features. Covers performance. *Fernholz Machinery Co.*

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## CALCIUM CARBIDE'S MANY USES

Sixteen-page brochure on calcium carbide and its derivative, acetylene, traces the contributions of this versatile man-made chemical. A simplified flow chart of its manufacture is included. Covers use of acetylene as a basic tool of the metalworking industries and as a key building block for chemical synthesis. *National Carbide Co., Div. Air Reduction Co.*

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## POWERED STRAPPING TOOLS

Booklet shows how powered steel strapping tools have increased packaging speed, reduced operator fatigue and produced more secure packages. Includes specifications for the applications of all powered stretchers, powered and manual sealers. *Acme Steel Co.*

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## INDUSTRIAL V-BAND COUPLINGS

Complete design information on V-band couplings for connecting and sealing all types of tubing, piping, ducts, containers or structural devices for industrial or aircraft applications is contained in this brochure. Includes data on coupling sizes. *Aeroquip Corp., Marman Div.*

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## ELECTRICALLY OPERATED VALVES

Illustrated 20-page bulletin describes 2, 3 and 4-way electrically-operated valves. Supplies descriptions, specifications, outstanding features, flow charts, optional features and dimensions. *Airmatic Valve Co.*

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## AUTOMATIC CARTONING

Brochure describes and illustrates firm's latest in automatic cartoning equipment. Discusses portability and simplicity of operation features. Includes details on adaptations and accessories as well as special combinations. Complete data on equipment, including a coder printer. *Bivans Corp.*

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## HYDRAULIC SPRAY PAINTING

Bulletin describes line of new airless hydraulic spray equipment and accessories for industrial maintenance or production painting or for general painting. Contains specifications on four units, two of which are portable units on elevator and truck assembly; another model designed for 55 gallon containers and a portable utility model. *Lincoln Engineering Co.*

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## CASTABLE CERAMIC FIBERS

A castable form of ceramic fibers and inorganic binder that is used directly from the shipping container is described in this bulletin. Discusses continuous use temperature up to 2300 degrees F., thermal shock resistance, casting procedure and suggested uses in combustion chambers for industrial oil and gas fired furnaces and many others. *Carborundum Co.*

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## AIRFOIL BLADED FANS

New 60-page bulletin discusses features of Series 116 centrifugal type airfoil bladed fans and lists suggested applications. Describes firm's construction for Class I, II, and III fans and discusses modifications which adapt the Series 116 fans to meet specifications for a wide variety of application conditions. *American-Standard Industrial Div.*

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**Chemical Treatments** to vitalize industrial detergents. *A. R. Maas Chemical Co.*  
Page 17                      Circle No. 12

**Western Tool Show**, Conference, Nov. 14-18. *American Society of Tool & Manufacturing Engineers.*  
Page 78                      Circle No. 53

**Recessed Illumination** for specific lighting needs. *Smoot-Holman Co.*  
Page 61                      Circle No. 33

**Stainless Steel Alloys**, research and manufacturing data. *ESCO.*  
Pages 35 & 36              Circle No. 22

**Hydraulic Presses** customized to requirements. *Pasadena Hydraulics, Inc.*  
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**Chain Link Fences** for industrial protection. *Anchor Fence Products, Inc.*  
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**T-1 Steel** castings, Engineering bulletin. *Alloy Steel & Metals Co.*  
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**Sta-Crete** for factories with a concrete floor. *Sta-Crete, Inc.*  
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**Hi-Speed Inline Valves** with solenoid coil. *Bellows-Valvair Corp. of California.*  
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**Cranes** with flexible suspension. Engineering data. *Cleveland Tramrail.*  
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Page 58                      Circle No. 30

**Payloader**, tractor-shovels for extra high lift job. *Frank G. Hough Co.*  
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**Carbon Steel Tubing**, catalog of new sizes. *Kilsby Tubesupply.*  
Page 41                      Circle No. 23

**Rotating Seal**, automatic, 40 standard types. *Perfecting Service Co.*  
Page 77                      Circle No. 50

**Shop Equipment**, a cabinet bench for every job. *Columbia-Hallowell Div. SPS.*  
Page 47                      Circle No. 25

**Handidrive Conveyor** handbook discusses advantages of pre-engineered units. *Standard Conveyor Co.*  
Page 59                      Circle No. 31

**Pipeline Strainers** that handle all media and equipment. *Sarco Co., Inc.*  
Page 103                      Circle No. 69

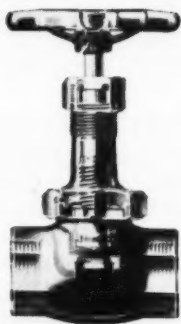
**Belting** that successfully resists oil and grease. *Ton-Tex Corp.*  
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**Stainless Steel Tubing**, centrifugally cast. *Centrifugal Casting Co.*  
Page 60                      Circle No. 32





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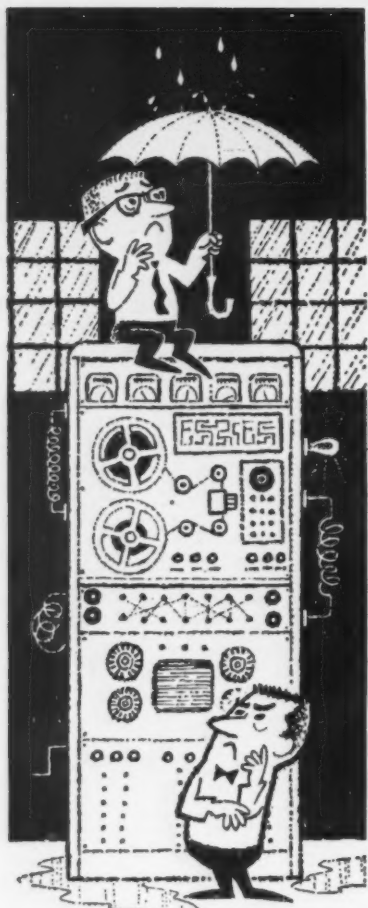


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### AUTOMATION

Booklet assesses the current state of the automation art, summarizes the need for and economic benefits of automation, and provides information on six key functions of automation: process control, computing, instrumentation, numerical control of machines, sensing, and communications. *General Electric Co.*

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### VARIETY SAW

A new rugged, heavy-duty, tilting arbor saw designed primarily for wood and plastic product manufacturers, lumberyards, builders, contractors and mills, is the subject of this brochure. Illustrates features, lists specifications and accessories of the new variety saw with a five-inch cutting capacity. *Rockwell Mfg. Co.*

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### SMALL A-C MOTORS

Line of small A-C special application motors designed for quiet running in office appliances, blowers, fans, and small electric tools is described in this bulletin. Lists construction features, ratings, and dimensions of 32 specific models in the line which offer 16 hp ratings between 1/100 and 1/3 hp. *Robbins & Myers, Inc. Fractional HP Motor Div.*

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### CONVECTION FURNACES

Comprehensive presentation of line of pit type convection furnaces gives a general description of the furnaces available in fuel-fired or electrical models. Covers temperature ranges, shell construction, insulation, combustion equipment and heating elements. Discusses features, application; includes specifications. *Hevi-Duty Electric Co.*

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### VIBRATION, NOISE CONTROL

A comprehensive, illustrated guide on line of resilient mountings and mounting systems for vibration, shock and noise control. Booklet includes general design, application and performance data for 22 product series. Contains information helpful in primary selection of the right bonded rubber mounting or flexible mounting system for any particular job. *Lord Mfg. Co.*

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### SET SCREW ECONOMICS

A capsule review of the relative economics of set screw installation: by hand, by power tool and by automatic inserter, is featured in this bulletin. Describes an improved model of automatic set screw inserter capable of 2500 insertions an hour, listing features. *Standard Pressed Steel Co., Industrial Fastener Div.*

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### POWER-CRATER LIFT TRUCKS

A new series of lift trucks in the 3,000, 4,000 and 5,000 lb. capacity ranges and with a new power-crater engine is the subject of this catalog and specification bulletins. Covers design, engineering, construction and operation of the three models. *Allis-Chalmers Mfg. Co., Engine-Material Handling Div.*

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### NEW LINE INCLINABLE PRESSES

Brochure describes new line of inclinables having slide, bolster and connection that permit interchangeability of parts and dies with firm's OBI's now in use. Discusses design features including two clutches available, compact electrical controls and an optional inclining mechanism. Includes schematics, dimensional data. *E. W. Bliss Co.*

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### RIGID ALUMINUM CONDUIT

This 32-page manual compares physical properties and performance factors of rigid aluminum conduit to steel conduit in indexed charts, tables and text. Covers weights and dimensions, allowable fill for new and rewiring projects, corrosion resistance, installation cost data, on-the-job techniques, NEC data and safety factors. *Kaiser Aluminum & Chemical Sales, Inc.*

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### WESTERN TYPE FLOORING

Brochure on new-type floor sections that have been application-engineered to particular West Coast building criteria. Describes floors available in ribbed and cellular structural sections for roof and floor construction. Folder tabulates section properties and allowable loads for simple spans. Suggested specifications for cellular sections are included as a guide. *R. C. Mahon Co., Western Operation*

... FOR YOUR COPY, CIRCLE NO. 120

## STANDARDIZED STEEL SHELVING

Steel shelving for storage and display use is pictured and described in brochure which highlights the features of the line. Covers convenience, easy installation, durability and economy due to standardization. Discusses flexibility of use for changing needs in storage application. *General Fireproofing Co.*

... FOR YOUR COPY, CIRCLE NO. 121

## GLASS FIBER DATA

Technical data on properties of glass fiber are a feature of bulletin listing applications of fiber glass, particularly for use as package cushioning and for vibration damping. Also shows application of glass fiber to machine base mounts, acoustical isolation and molded insulation. *Fibrous Glass Products, Inc., Sub. of Pall Corp.*

... FOR YOUR COPY, CIRCLE NO. 122

## VERTICAL BREAK SWITCH

Bulletin describes a high voltage vertical-break type air switch, discussing its features: fully controlled blade mechanism, high pressure contacts, silver inlay contact points, hard drawn copper blade, factory sealed blade bearings, and rotating insulator bearing. Also pictures six different types of current interrupters. *H. K. Porter Co., Inc., Delta Star Div.*

... FOR YOUR COPY, CIRCLE NO. 123

## TOOLS FOR THE SHOP

Catalog covers precision tools for the production line or toolroom use. Included are dividing heads and rotary tables; universal facing and boring heads; tool makers and machine vises; clamps and gripping claws; step blocks and tool holders; Vernier calipers for workshop and inspection; Vernier depth and height gauges and many others. *Karl A. Neise, Inc.*

... FOR YOUR COPY, CIRCLE NO. 124

## GLASS BASE LAMINATES

Technical reprint on how to machine glass base laminates describes specific techniques for fabricating these versatile plastic materials. Techniques covered include sawing, shearing, slitting, punching, drilling, tapping and threading, turning, boring, facing and milling. Tooling needs are covered and recommended set-up procedures. *National Vulcanized Fiber Co.*

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# Save up to 1/3 on the cost of your next conveyor...new handbook shows how

Tells how to cut planning and installation costs with pre-engineered, ready-built conveyor components for immediate or future handling needs

Install a conveyor system to meet your specific materials handling needs today... tomorrow... or in years to come. Using Standard's Handidrive handbook, simply order pre-engineered, prebuilt interchangeable conveyor components to which additions or alterations can be made as required.

"Do-it-yourself" buyer-users will find Handidrive assembly is fast, easy. The pre-engineered stock units include: roller conveyors (either gravity push-along or live roller type), inclined belt conveyors, drive units, intermediate sections, curved sections, supports, hangers and other miscellaneous items.

Lower initial cost—you buy only what you need—is only one of many Handidrive "off-the-shelf" benefits. The

Handidrive handbook gives full details! Get your copy now... free of charge, of course.

## 3 plans to help you select and order simplified HANDIDRIVE pre-engineered units

"Do-It-Yourself" Plan — Determine your conveyor requirements, then select stock units from Handidrive handbook.

"Recommendations-Requested" Plan — On your request, a Standard specialist will advise you on installation of a custom-tailored Handidrive conveyor

"Leave-It-All-To-Standard" Plan — Standard's staff of experienced engineers will work out your handling problems of a more complex nature.



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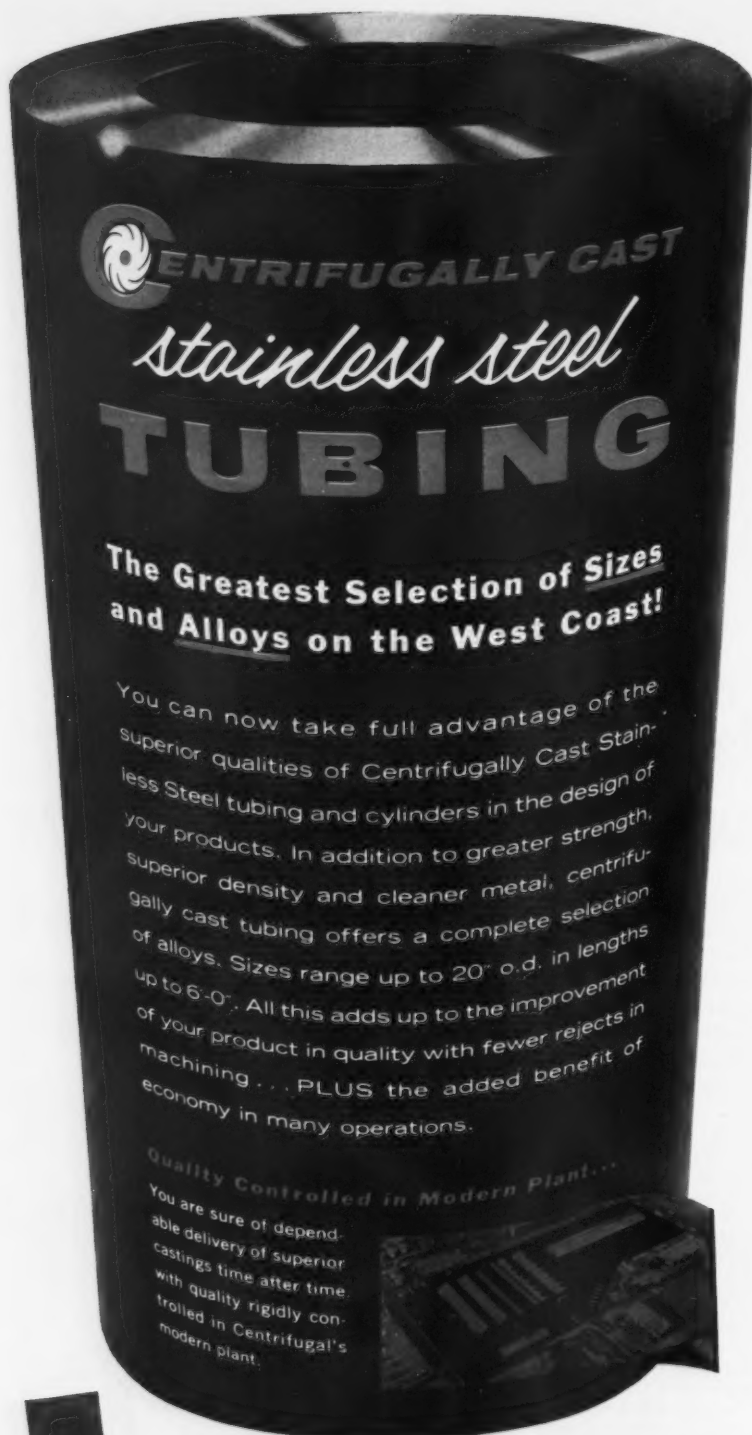
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### EPOXIES IN THE FOUNDRY

Ten applications of tooling plastics enabling savings of up to 60 per cent are outlined in this brochure. Blow core boxes, loose pieces, spotting slugs, match plates, core sticks, cope and drag patterns, fillet pastes and pattern coating resins are a few of the applications described. *Furane Plastics Inc.*

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### PALLET OR PALLETLESS HANDLING

Brochure gives industrial truck lift users the pros and cons of both pallet and palletless handling methods. Lists the types of industries with conditions most favorable to palletless handling. Includes action photos for ideas on how similar companies in these industries are handling their products. *Automatic Transportation Co.*

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### HIGH TEMP GAS CARBURIZING

Heat Treat Review contains discussion of the newest developments and present status of high temperature gas carburizing. Includes illustrations with numerous heating curves, test sample micrographs and photos of typical high temperature carburizing equipment. *Surface Combustion, Div. Midland-Ross Corp.*

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### STORAGE PROBLEMS

Illustrated brochure is devoted to solving storage problems with structural steel tubes and branch tubes that are positioned in a unique Kee Klamp and locked by integral grub screws. Discusses unlimited scope of use of the tubular structures up to the ceiling, down to basement, around obstacles and over gangways. *Wedge-lock Corp.*

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### WELDING EQUIPMENT

Gas-shielded metal-arc welding equipment catalog covers complete line, both manual and automatic. New items covered are manual gun for applications employing carbon dioxide ( $\text{CO}_2$ ) as a shielding gas and two machine heads for production line welding. New accessory equipment is included plus data on welding wires, shielding gases and gas delivery systems. *Air Reduction Pacific Co., Div. Air Reduction Co., Inc.*

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WESTERN INDUSTRY/AUGUST 1960



## PRESSES, PUNCHES, SHEARS

Metal working hydraulically operated presses for punching, shearing, forming, notching, bending, coping, squeezing, and riveting are described in this 56-page catalog. Covers line of portable and bench-mounted hand-operated punches and presses, as well as tooling for both hand-and power operated units. Describes a portable hand operated shear for cutting corrugated steel or aluminum sections. *W. A. Whitney Mfg. Co.*

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## RUGGED MEMORY SYSTEM

A memory system with a wide range of industrial applications on handling, marking, sorting or conveyor equipment is discussed in this booklet. Describes operation of the system which handles sorting or processing decisions manually by use of a push button console, or automatically, by limit switches or weight or size of the conveyORIZED material. *Republic Electric & Development Co.*

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## THREAD GUIDE

Guide to screw thread technology offers a basic introduction to the varied types of threads, outlining the history of threads, terminology and major differences between the major kinds of threads. Charts detail the measurements, characteristics and capabilities of the standard thread types and characteristics and other data of tapping screws and wood screws. Includes a torque guide. *H. M. Harper Co.*

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## SHAPED WIRE

Catalog describes facilities for providing wire of various analyses pre-shaped to a desired cross-section to help user cut production costs and improve product design. Includes methods of calculating areas of common shapes; physical properties of steel wire; table of standard wire gauges; and hardness conversion tables. *Page Steel & Wire Div., American Chain & Cable Co., Inc.*

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## ALUMINUM BOXES AND COVERS

Catalog lists over 12,000 standard deep drawn aluminum boxes and covers. Lists specifications including width by length, blank thickness, alloy, height maximum and minimum and corner radii. Explains secondary operations available for punching, welding, trimming, louvering, stamping, painting, or silk-screening to adapt any standard box into a custom container, housing, cabinet or case. *Zero Mfg. Co.*

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## POWER STRAPPING TOOLS

Folder describes 12 models of power combination strapping tools. Specification chart lists typical applications for each of four electric-powered and eight air-powered models, maximum strap tension and weight, strap width and seal size to be used in the various tools. Also details appropriate tool mounts, balancers, balance arms and suspension brackets. *Signode Steel Strapping Co.*

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## SMOOT-HOLMAN

# "WILSHIRE" 2' x 4' LUMINAIRE

- ① Choice of 8 different diffusers to meet specific lighting needs.
- ② Easy and fast to install... 4 "jacks" flip outward to support fixture on wood or metal furring.
- ③ Leveling screws adjusted from below. No above-the-fixture work necessary after service lines are in.
- ④ Ten mounting styles, tailored to fit various types of ceilings, save man-hours and money.

**For the Architect**—clean, flush mounted... adaptable to various ceilings... versatility allows complete freedom of design.

**For the Engineer**—Dependable lighting performance and fixture construction.

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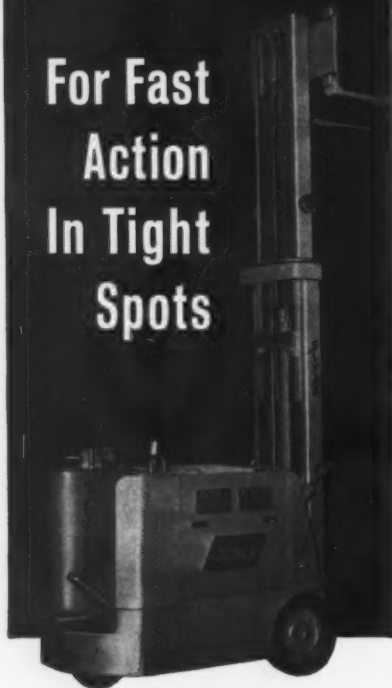
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# ELPAR "Cargo Scout"

For Fast  
Action  
In Tight  
Spots



## ■ SHORT TURNING

Short wheelbase, rounded rear corners and 180° turning angle of ELPAR's "Cargo-Scout" assure maximum maneuverability in narrow aisles, crowded docks and other confined spaces!

## ■ HIGH SPEED

ELPAR's high speed lift and travel plus fast acceleration assure more work in less time.

## ■ SAFETY

The stand-up operator's position on the ELPAR "Cargo-Scout" means he can get off fast in emergencies. Duplicate hand and foot controls make it easy to drive this truck backward when bulky loads limit forward vision.

**4 models - 2, 3, 4, & 5,000 lbs.**

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## EXHAUST PURIFIERS

Folder illustrates and describes exhaust purifiers for oxidizing carbon monoxide, fumes and odors from gasoline, LP-gas and diesel-powered equipment. Explains principle and construction of catalytic exhaust purifiers; gives technical characteristics and performance data. *Oxy-Catalyst Inc.*

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## COATINGS SELECTOR

Charts are a guide to the selection of specialty coatings available for application on plastics, metals, glass and wood. The charts show the uses and characteristics of line of spray, dip and flow coating materials, vacuum metallizing coatings and standard plastisol formulations. *Bee Chemical Co., Logo Div.*

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## HIDDEN WATER COSTS

Eliminating water waste is the subject of this brochure which points out ways that proper valve selection and application can reduce hidden costs connected with the use of water in industry. Focuses attention on the pitfalls in allowing water pressures to go unregulated or poorly regulated. *Leslie Co.*

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## CAN LINE AUTOMATION

Handbook on can line automation for can handlers, both in manufacturing and in can using plants. Booklet describes use of electromagnetics, such as proximity controls, plus pneumatic and other devices to achieve the simplest control of can movement. Includes many typical uses flow-diagrams and reasons why these methods work. *Peco Corp.*

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## KLIMP FASTENER MANUAL

Manual presents national standards for cleated plywood and veneer shipping boxes, an outgrowth of the nationwide use of Klimp fasteners. These fasteners make it possible to re-use panels since they do not damage wood as assembly nails do. Manual gives full "how to" data on the use of Klimp fasteners in packaging. *Navan Products, Inc., Sub. North American Aviation, Inc.*

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## AUTOMATIC DEPALLETIZING

Bulletin points out engineering improvements in newly designed depalletizer that makes it possible to increase operating efficiency. Explains how electrical controls permit changing depalletizing operation from one case size to another with a turn of a switch. *Alvey Conveyor Mfg. Co.*

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## VERTICAL CONVEYOR

A new concept in conveyors that provide continuous carriers that go either up or down and across from place to place, yet take up only little more space than the commodities that they carry, is the subject of this brochure. Schematic diagrams suggest some of the conveyor systems that can be made. *Standard Conveyor Co.*

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## BORAX AND BORON COMPOUNDS

Information on the production, uses and chemistry of borax, borax glass and boric acid are contained in this 24-page booklet. Also outlined are properties, reactions and uses of boron oxide, boron trichloride and 30 other boron compounds now available in research quantities. *Stauffer Chemical Co.*

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## TUBING SELECTION GUIDE

Selection of steel tubing according to type, finish, analysis, formability, machinability, weldability and relative cost is made easy in this bulletin through a comparative listing of characteristics of seamless and welded round, square and rectangular tubing for mechanical, hydraulic cylinder, fluid line, and structural applications. *Joseph T. Ryerson & Son, Inc.*

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## PHOSPHATIZED STEEL SHELVING

This 36-page catalog covers a complete line of steel shelving for industrial and commercial use. Includes T-line clip shelving, angle shelving, tool storage inserts, drawer case and bin units; custom, truck and bookcase shelving; lockers and storage cabinets. Describes pre-paint phosphatizing process and other quality control procedures. *Alan Wood Steel Co., Penco Div.*

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## ROTATING SHAFT SEALS

Catalog of line of seals covers basic seal designs: bellows, boot, cartridge, grommet, labyrinth floating and "O" ring types. Discusses general operating ranges and limitations which determine choice of seal to be used. Describes construction and operating features, applications and rotor selection. *Cartriseal Corp.*

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## STORAGE RACK ECONOMICS

Booklet devoted to modern storage needs, storage costs, improper rack designs and the cost of damaged materials and products. Second half of the 28-page booklet discusses the engineered approach to storage racks, covering design, storage problem analysis and important advantages of quality engineered racks. *Paltier Corp.*

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## AIR CONTROL

Brochure describes a power roof exhaustor, a dual exhaustor-recirculator and a supplier designed for make-up air or for supplying air in structures where the windows and doors are either of insufficient size or number to permit adequate ventilation. Discusses specifications and a chart shows recommended air changes for various industries. *Genie Air, Inc.*

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## BINDERS, SAND ADDITIVES

A complete line of foundry binders and additives for both core and molding sands is described in this booklet. Products covered include cereal binders for cores and molds, dry and liquid baked strength core binders, dextrans for greater surface hardness and additives for sodium silicate CO<sub>2</sub> cores and molds. Detailed data on suggested applications. *Corn Products Sales Co.*

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## AUTOMATIC ASSEMBLY MACHINES

Automation components and entire assembly machines for production requirements are pictured, and their special purposes explained in this 46-page catalog. Includes models of automatic motion index tables, dial assembly presses, rivet spinners and special assembly machines, along with tooling and automatic feeds. *Precision Detroit Co.*

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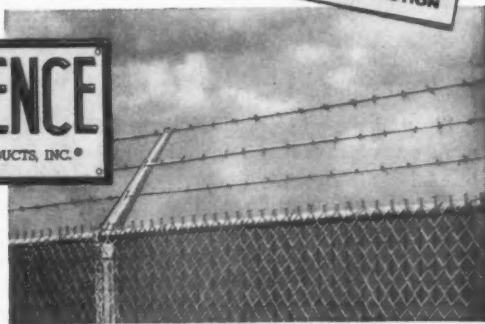
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"When this new soft drink plant went up in the fall of 1959, 700 feet of Anchor Fence were installed at the same time. The architect specified chain link for its durability and maximum protection features. The contractor selected Anchor Fence after competitive pricing. Our Anchor Fence prevents trespassers from short-cutting through the property and definitely discourages pilferage from trucks left in the yard overnight. The sliding gate is very valuable in helping us avoid traffic tie-ups."

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## SPECIAL MANUALS

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### TESTING AND INSPECTION EQUIPMENT

#### Wide Range Production Testing

A measuring device that is portable and indicates torque, weight, tension, traction and compression is described in this bulletin. Includes wide range of application photos in production testing; schematics; dimensions of the six dial sizes and weights as well as a discussion of features. *W. C. Dillon & Co. & Inc.* . . . FOR YOUR COPY, CIRCLE NO. 200

#### Gauging Screw Threads for Acceptability

Technical article, "Gauging Screw Threads for Acceptability" explains the requirements of the new screw thread standards and some of the confusing indications of various types of thread gauges. Well illustrated by many diagrams, the paper is a reprint of a presentation to the ASTE. *Scherr-Tumico Co.* . . . FOR YOUR COPY, CIRCLE NO. 201

#### Mechanical Force Gauges

The operation of a line of mechanical force gauges is explained and illustrated in this bulletin. Gives complete specifications of 21 precision, direct reading gauges which can be used for measuring both tension and compression loads in ranges of from 0-500 grams up to a maximum of 0-500 lb. Includes picture-caption descriptions of typical gauge applications. *Hunter Spring Co.* . . . FOR YOUR COPY, CIRCLE NO. 202

#### Dial Indicator and Optical Proving Rings

Brochure describes two styles of proving rings: those using dial indicators to measure deflection and those using a highly sensitive optical system. Discusses application in measuring compression, tension or both types of load. Also gives full data and specifications on a portable calibration press for use in calibrating various testing devices against a calibrated proving ring. *Steel City Testing Machines, Inc.* . . . FOR YOUR COPY, CIRCLE NO. 203

#### Testing Equipment Catalog

Illustrations and brief descriptions of 77 testers or equipment manufactured as standard products is contained in this catalog. The units are grouped under abrasion testers; biological and scientific equipment; flammability-ignition tester; production, control and research equipment; thermal conductivity dielectric units; and thickness compression and recovery gauges. *Custom Scientific Instruments, Inc.* . . . FOR YOUR COPY, CIRCLE NO. 204

#### Lab Analysis, Process Control and Research

Instruments for laboratory analysis, process control and research are covered in this new catalog. Describes techniques and instruments for leak detection, mass spectrometry, chromatography, moisture monitoring, and other types of analysis and control. *Consolidated Electrodynamics Corp.* . . . FOR YOUR COPY, CIRCLE NO. 205

#### Care of Rectangular Gauge Blocks

Brochure lists six important rules for the protection in handling and storage of stainless steel and standard alloy steel gauge blocks. Photo illustrations show how to wring rectangular gauge blocks. Discusses gauge holders and putting gauge blocks to work by assembling holder, end-standards and gauge block combination. *DoAll Co.* . . . FOR YOUR COPY, CIRCLE NO. 206

#### Optical Comparators and Universal Measuring Machine

Optical comparators for inspection of all kinds of parts and products from tiny screw threads to involute gears, from pen points to jet engine compressor discs are covered in this catalog. Includes applications, operation, models, features and specifications; standard charts and fixtures, special charts and fixtures; accessories and lens data. *Jones & Lamson Machine Co.* . . . FOR YOUR COPY, CIRCLE NO. 207

#### Mobile Tester for Rockwell Hardness

Bulletin describes newly developed tester designed for testing hardness on large or bulky metal components and work specimens that have to be tested in position in production areas, open yards or, are too heavy to be hauled to a testing station. Discusses clamping designs, data on the two models and illustrations. *Wilson Mechanical Instrument Div., American Chain & Cable Co. Inc.* . . . FOR YOUR COPY, CIRCLE NO. 208

#### Air Gauging

This 48-page book opens with a discussion of air gauging to increase profits and presents pictorially gauging elements for all dimensions, conditions and relationships. Describes a line of air gauge column instruments, operation, features, scales; how to choose the best amplification. Includes adjustable airebore gauges, calibrators, master setting rings, a complete line of precision gauging equipment and applications. *Sheffield Corp.* . . . FOR YOUR COPY, CIRCLE NO. 209



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a new dimension in shelter engineering  
employing the versatile SEALZIT gun

With the FLINTKOTE Monoform System you can now cut roof maintenance costs by more than 20%! The basic tool is the SEALZIT gun which, at low cost, cuts glass roving and simultaneously applies especially formulated compounds with the glass fibre.

These may be combined with any number of aggregates: crushed rock, vermiculite, sand, roofing granules, metallic powders and decorative flakes...for roofing, re-roofing, waterproofing and corrosion protection.

**EXAMPLE:** Conventional method, lowest cost maintenance type minimum re-roofing specification with up to 10 years' weather protection.  
in place cost.....approximately \$11.50 per sq.\*\*

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**YOU SAVE 23.9%**  
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### Portable X-Ray Unit

An X-ray unit that features 360 degree circumference radiography in addition to single beam use is described in this bulletin. Discusses versatility of use, specifications of the X-ray head and control panel. *Balteau Electric Corp.*

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### Portable Balancer

A precision, portable balancer is the subject of this bulletin. Discusses design for ease of operation, utmost sensitivity and vibration analysis of all types of assembled machinery to cut maintenance and increase quality of production. *Stewart-Warner Corp.*

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### Precision Dial Indicators

Line of precision dial indicators cataloged in this booklet includes comparator gauge for checking grooves and bores with interchangeable tips; high precision test indicators; dial indicators; and dial comparators. Includes specifications in English and metric measures. *Borel & Dunner*

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### Checking Surface Flatness in Millionths

Brochure describes black granite surface plates in laboratory, inspection and toolroom grades as well as accessories for precision surface plate use. Chart gives size, thickness and overall accuracy of the three grades; discusses important features of black granite for surface plates. *Collins Microflat Co.*

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### New Height Gauge

Brochure about a new height gauge which is specifically designed for use in inspection, precision layout work, and checking jigs and fixtures. Discusses features including accurate measurements to .0001 in.; speed and ease of operation; variety of sizes; and rugged construction. *United States Chemical Milling Corp.*

... FOR YOUR COPY, CIRCLE NO. 214

### Gauges and Measuring Instruments

New booklet illustrates and describes line of gauges in six, 12, 18, 24, 36 and 48 in. models which can be set in 10 to 15 seconds and are designed for use on the surface plate either away from or at the machine. Also describes a thread analyzer and a special gauge for inspection of cylindrical gauges and other high-precision parts. *Cadillac Gage Co.*

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### Precision Surface Equipment

Equipment for testing and inspection work particularly where metal parts are involved is included in this catalog. Covers angle plates, V-blocks and similar units for accurate machine set-ups; precision work surfaces and holding devices for accurate inspection procedures and special precision equipment for special needs. Includes illustrations, descriptions, specifications and applications. *Challenge Machinery Co.*

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### Magnifying Comparators and Reticles

Brochure describes a pocket model comparator and a model for desk use. Discusses typical applications and 15 advantages of the instrument. Lists 20 different patterns in reticles, five being recent additions. *Finescale Co.*

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### Precise Measuring of Pressure, Tensile or Torque

A compact mechanical force gauge for precision measuring of pressure, tensile or torque even in very limited spaces is described in this brochure. Covers features, applications, variations of the model and pertinent dimensions. *W. C. Dillon & Co., Inc.*

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### Pocket Type Viscosity Comparator

Data on a pocket type viscosity comparator for quick, on the spot checking of oil viscosity under all conditions. Recommended for locomotive, marine, stationary, or aircraft engines and for hydraulic equipment. *Testing Machines, Inc.*

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### Electronic Gauges

Catalog of line of testing and inspection equipment covers an indicator unit, a Vernier height gauge indicator unit, indicator probes; Vernier height gauge adapter, gauge heads; comparators; contact impact eliminator; and special gauging equipment. Gives full data on each unit, and descriptions. *Merz Engineering Inc.*

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### The Multifaceted Gauge Block

Reprint of an abstract on how the gauge block is calibrated and how it is used. Originally presented to the 14th Annual Instrument-Automation Conference, the illustrated abstract discusses National Standards, definition of a gauge block, facets, new developments and conclusions. *Sheffield Corp.*

... FOR YOUR COPY, CIRCLE NO. 221

### Assembly Line Balancing by Unskilled Operators

Catalog covers line of dynamic balancing machines designed for high production and maximum sensitivity. Discusses features including sensitive to 20-millionths of an inch; simple single knob control for magnitude. Describes a model designed for fast assembly-line balancing by unskilled operators that handles rotating parts from one ounce to 400 lbs. *Bear Mfg. Co.*

... FOR YOUR COPY, CIRCLE NO. 222

### Industrial Gas Chromatographs

Booklet describes industrial gas chromatographs used for stream analysis in chemical plants, refineries, and other process industries. Gives complete details and specifications on the construction, performance, operating features and applications of the instruments. Includes installation and product photos, flow diagrams, chromatograms, and dimensional drawings. *Beckman Scientific and Process Instruments Div.*

... FOR YOUR COPY, CIRCLE NO. 223



sorry,  
only  
**one**  
to a  
customer

#### FOR PLAYBOYS ONLY...

I have something.

And it's just for you.

It's a book.

I play an important part in the book.

I hold a can of Sta-Crete 7 different ways.

You may as well send for the book—even if you don't know what Sta-Crete is.

After all, it's free.

#### FOR BIG BUSINESS MEN...

You have a factory with a concrete floor.

It's getting so beat-up shipping clerks have been missing in the bigger cracks for days and search parties won't go after them.

You can tear up the concrete floor and put in a new floor for just a little under \$99,000.00.

Or if you're smart you can get yourself a little can of Sta-Crete—spread on a light coat filling in all cracks and breaks and it'll only last forever. Even if you run an indoor testing ground for Sherman tanks.

Sta-Crete is so powerful you could lift a Sherman tank with one large drop.

Sta-Crete is so durable you could run the tank on a concrete floor refinished with Sta-Crete all day long and it won't even scratch its surface.

You don't believe it?

You do believe it but you don't have a Sherman Tank?

So forget it. There probably won't be enough copies of the Sta-Crete Sta 'n Play Gal book to go around anyway.



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City: \_\_\_\_\_ State: \_\_\_\_\_

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#### Automatic Control and Inspection

Booklet devoted to "autometrology," the single or multiple combination of machining, motion or memory with automatic measurements. Covers automation systems and equipment for both in-process gauging and post-process gauging adaptable to the small manufacturer who has repetitive machining and gauging operations as well as to mass-production. *Sheffield Corp.*

... FOR YOUR COPY, CIRCLE NO. 224

#### Motorized Hardness Tester

Bulletin describes line of four new motorized hardness testers which are available in combination testers providing both regular and superficial Rockwell hardness testing in a single machine. Describes tester also available as single-purpose instrument for either regular or superficial testing alone. Discusses features and includes specification data. *Torsion Balance Co.*

... FOR YOUR COPY, CIRCLE NO. 225

#### Environmental Testing

Data on environmental testing and other applications for controlled atmospheric conditions is the subject of this 32-page brochure. Pictorial chart summarizes latest known data at altitudes from sea level up to two million feet. Shows specific weight, pressure, acceleration of gravity, and molecular weight at various altitudes. Includes applications, and details on 13 types of chambers and low temperature freezers. *Webber Mfg. Co.*

... FOR YOUR COPY, CIRCLE NO. 226

#### Optical Potentiometer-type Pyrometers

Data brochure devoted to line of pyrometers for temperature measurements up to 7600 F or 4200 C in plant or laboratory. Describes and illustrates the construction and operation of the pyrometer, graphically showing the application of the "disappearing-filament" method of temperature measurement. Equipment for comparison checking of pyrometers is also listed. *Leeds & Northrup Co.*

... FOR YOUR COPY, CIRCLE NO. 227

#### Gauge Block Sets for Measuring

Catalog covers line of gauge blocks suitable for a modest shop as well as for the most severe requirements of precision and durability. Includes gauge blocks in square and rectangular types with accessories, both in steel and tungsten carbide. Discusses selection, inspection, specifications and materials; technical data and typical applications. *Fonda Gage Co.*

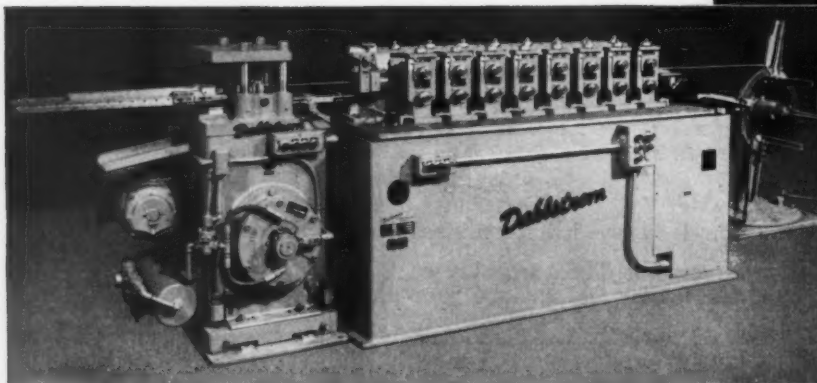
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#### Pressure and Temperature Recorders

Catalog of pressure and temperature recorders includes illustrations of spiral bourdon tube and bellows type pressure elements, with materials and performance characteristics listed. Temperature elements described include mercury, vapor and gas pressure, and organic liquid. Discusses mechanical construction features and diagrams show case dimensions. *U. S. Gauge, Div. of American Machine and Metals, Inc.*

... FOR YOUR COPY, CIRCLE NO. 229

## COMPLETE ROLL FORMING LINES BY *Dahlstrom*



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INCORPORATED

4239 W. Belmont Ave., Chicago 41, Ill., Phone: SPring 7-3670

West Coast Representatives: J. A. "Tony" Schaefer Co., 6000 Sunset Blvd., Hollywood, California  
Batina Machinery Co., 72 East Third Ave., San Mateo, California

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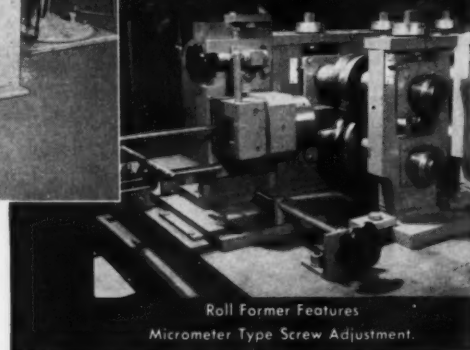
WESTERN INDUSTRY/AUGUST 1960

## SAVE!

... Whether your problem is large or small, Dahlstrom has available "complete" Roll Forming Systems that can be tailored to your requirements.

Standard Dahlstrom Machines are available in integrated Roll Forming Lines or as individual units - Coil Lifts, Coil Reels, Roll Straighteners, Roll Forming Machines, Flying Die-Type Cut-Off Presses, Measuring Tables and Run-Out Conveyors.

Send us your problem.



Roll Former Features  
Micrometer Type Screw Adjustment.



### Hole Locating and Concentricity Gauges

Six standard models of gauges with non-rotating pilots and stationary protected indicators are pictured in this bulletin. Also describes six special models for checking large holes, adjacent shoulders, threaded holes, bottom of holes, splined holes, and holes that vary in size. *Atherton & Co.*

... FOR YOUR COPY, CIRCLE NO. 230

### Measuring Air Pollution

A portable air sampler for accurately testing large volumes of air for particulate matter by means of a filter paper is described in this brochure. Discusses accuracy to 1/100th of a micron for indoor or outdoor use and lists wide range of application. *Staplex Co., Air Sampler Div.*

... FOR YOUR COPY, CIRCLE NO. 231

### Precision Bench Unit Optical Comparator

Brochure describes a newly introduced Model VI optical comparator, a sturdy rigid bench instrument in a cast-aluminum housing. Includes specifications, dimensions, lens magnifications and power requirements. Covers lenses, accessories and attachments. *Nikon Inc.*

... FOR YOUR COPY, CIRCLE NO. 232

### Chromium Plated Gauge Blocks

Illustrated booklet gives background development of chromium plated gauges and standards. Pictures 10 sets of various sizes of blocks, size ranges and shapes. Includes section on precision gauge block accessories. *Dearborn Gage Co., Ellstrom Standards Div.*

... FOR YOUR COPY, CIRCLE NO. 233

### How To Read a Micrometer

Literature describes the micrometer's principle of operation, how to read gradations and caliper on a conventional micrometer from thousandths to ten-thousandths of an inch. Illustrates three examples on calculating reading. *J. T. Slocomb Co.*

... FOR YOUR COPY, CIRCLE NO. 234

### Concentricity and Hole Relation Gauges

Engineering and functional data, general information as well as an indicator selector guide are included in this catalog of concentricity, hole location and hole relation gauges. Also discusses hole location gauging, typical design variations, and special "sweep" gauge adapters, expanding centralizers and thread adapters. *A. G. Davis Gage & Engineering Co.*

... FOR YOUR COPY, CIRCLE NO. 235

### Balancing Machines

Book discusses the nature of balancing, causes of unbalance and the types of balancing operations including static and dynamic balancing and a combination of the two types. Describes balancing machines and their part in the balancing process; measurement of amount of unbalance and indication of where correction should be made. Pictures and describes line of balancing machines and complete specifications. *Gisholt Machine Co.*

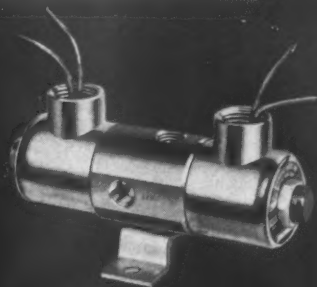
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## LOOKING FOR VALVES?

### ASK FOR

# Airmatic

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1/4" orifice—80psi max.

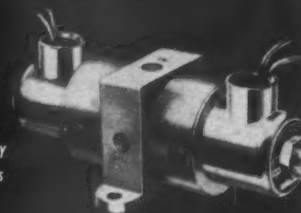


3-WAY  
1/4" orifice—200psi  
1/8" orifice—80psi



2-WAY  
Maximum 1,500psi

MINIATURE 4-WAY  
1/4" or 3/16" orifices



Name any style, capacity or size of electrically-operated valves—2-way, 3-way or 4-way—air, oil, water or vacuum—you'll find them at Airmatic... practical in design, compact, precision made and individually tested to full pressure rating.

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AX-27

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... for more details, circle No. 39 on Reader Service Postcard



# NEW EQUIPMENT

FOR WESTERN PLANT OPERATION, PRODUCTION AND MAINTENANCE



USE RIP OUT POSTCARD, PAGE 70, FOR MORE INFORMATION ON PRODUCTS DESCRIBED

## MOUNTINGS WITH LEVELERS

...simplifies machine installation, controls vibration



A complete line of mounts to simplify any machine installation job while affording maximum noise and vibration control has been announced. Newest additions to the line are a small, leveling model for use on office machines and similar equipment, and a family of "do-it-yourself" mounts with the advantages of custom installations. The dampening material, Unisorb, permits installation of any machine, even 450-ton presses, without the problems that go with bolting or lagging the equipment to the floor. Promotes permanently precise leveling, reduces machine wear and tear from vibration, cutting worker fatigue. *Vibration Control and Machine Mounts Div., Felters Co.*

... FOR MORE DETAILS, CIRCLE NO. 300

## COMBINATION METER-SERVICE LINE

...redesigned and expanded to include 28 devices



Line of combination meter and service entrance devices offers a complete range of choice to meet varying application requirements. The 28 devices feature mains rating from 50 amperes through 200 amperes. Circuit breaker or fusible type main disconnects. New tandem 00 breakers, by combining two full-size breakers into one space-saving unit, now provide more circuits in the same place. All devices are adapted for 1959 NEC non-interchangeable circuit breaker regulations. New wide (13 3/4") NEMA 3 enclosures feature increased wiring room, top load knock-outs in semi-flush devices, and require no framing as they mount between and to the studs. *Square D Co.*

... FOR MORE DETAILS, CIRCLE NO. 301

## DRY FILM LUBRICANT

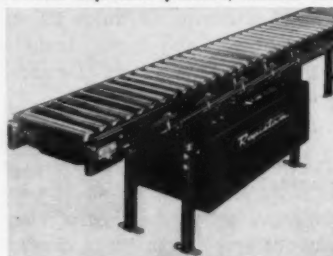
...leaves lubricated surface dry, impervious to water

A new concept in dry film lubrication as an addition to a regular line of metallic lubricants has been released to the industrial market. For use in areas where "wet" lubrication had previously been impossible, for reasons of contamination, dust, dirt and lint, this dry lubricant creates the full, completely protective plating of self-lubricating solids in 90 seconds, leaving the lubricated surface absolutely dry. Impervious to water, detergents and most chemicals, it will withstand infinite cold and operates up to 1800 degrees F. *Imperial Oil and Grease Co., Inc.*

... FOR MORE DETAILS, CIRCLE NO. 302

## LIVE ROLLER CONVEYOR

...with adjustable pressure, handles diversified materials



Development of a new live roller APC (adjustable pressure) conveyor to supplement established APC wheel-type conveyor line has been announced. The new conveyor handles larger, wider, heavier and more diversified types of material, including cans, drums or other chimed bottom containers and wooden crates or pallets with bottom slats and materials with flat rigid surfaces. A selection of eight frame widths, up to 36 in., is available with the live roller APC model. Rollers are set high to convey packages wider than the roller sections. Maximum loads of 100 lbs. per running foot are possible on the increased carrying surface of the rollers. *Rapids-Standard Co., Inc.*

... FOR MORE DETAILS, CIRCLE NO. 303

## TEFLON COATED GLASS BELTS

...now available in custom sizes for conveying

Teflon coated fiberglass endless belts, used in chemical food processing, packaging, paper, plastic, printing, textile and other industries, are now available in custom sizes. Dimensionally stable at temperatures from minus 400°F, teflon glass belts are custom manufactured in widths from one-quarter in. to 36 in. and lengths from three in. to 90 yds. Available in thickness from .003 to .010, breaking strength is from 45 to 200 lbs. per in. of belt width. Fiberglass cloth impregnated with teflon provides a virtually stick-free belt which is self-cleaning and self-lubricating, unaffected by all chemicals except certain alkali metals, and non-contaminating to food. *R. S. Hughes Co., Inc.*

... FOR MORE DETAILS, CIRCLE NO. 304



This installation consisting of seven hand-propelled cranes on a flexibly suspended runway is used for stripping wire blocks in a large steel mill. Note how easy it is with the Cleveland Tramrail design to position the

runway at any level or location desired. Likewise, it is extremely simple to dismantle and relocate the equipment to serve some other application, should such ever be necessary.

## FLEXIBLE SUSPENSION

### *Assures Smooth Crane Operation*

**C**LEVELAND Tramrail's unique flexible suspension method of supporting crane runways prevents binding of wheels on the tracks and assures smooth easy rolling operation, regardless of location of the load on a crane bridge.

The floating runways compensate automatically for normal skewing or twisting of crane bridges.

This is one of the reasons why hand-propelled Cleveland Tramrail cranes can be used for so many jobs where motor-driven cranes would otherwise be required.

Operation is so easy that Cleveland Tramrail guarantees a starting effort of 15 lbs. and running effort of 10 lbs. per ton weight.

Write for free copy of illustrated booklet No. 2008, "Engineering and Application Data".

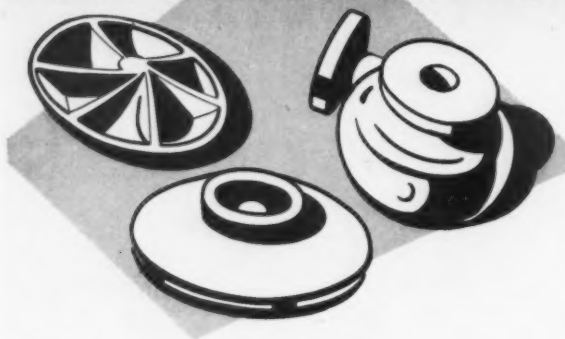


Overhead Materials Handling Equipment

CLEVELAND TRAMRAIL DIVISION • THE CLEVELAND CRANE & ENGINEERING CO. • 8812 E. 290 ST. • WICKLIFFE, OHIO

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## Stainless Castings



The *Toughest* ones ...  
To your *Exact* specifications

Whether you need a closed impeller, a special alloy, or a thin wall, count on Superior Alloys' modern equipment and foundry know-how to meet your exact requirements.

You will be drawing on the pooled knowledge of a superintendent with a 20-year metallurgical background, a plant engineer who formerly was professor of foundry engineering at a leading university, and a general manager with 36 years in the foundry business.

For corrosion and heat resistant castings, production or short runs, to 700 pounds and highest X-ray standards, call Superior, or your nearby sales engineer.

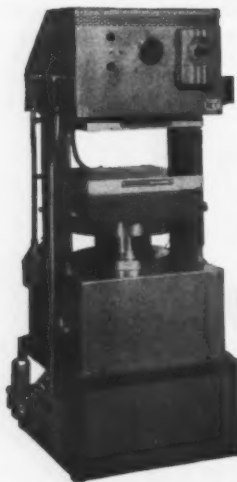
## SUPERIOR ALLOYS CO.

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## HYDRAULIC PRESSES

20 tons to 500 tons ram pressure



Platen area 8 to 24 inches  
Motorized hydraulic system  
Controlled platen temperatures to 600° F  
Automatic time cyler  
Customized to your requirements

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72

## 4-WAY SOLENOID VALVE

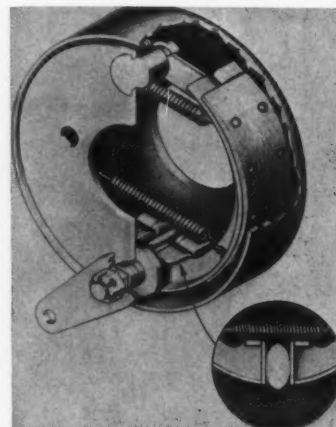
... life expectancy many millions of cycles

There are no restrictions on orifice sizes of this 4-way solenoid valve, with full 1/8 orifice (0-300 psi) to 3/16 orifice (0-90 psi). Corrosion-proof, the valve has only two internal moving parts and completely protected solenoid plungers. The coils are completely sealed from air, oil, gas and water and will not overheat on continuous duty. Coils for continuous or intermittent duty, AC or DC, are interchangeable. Life expectancy can be increased many millions of cycles more by inserting two new one-piece valve plungers. These can be replaced without disturbing rigid piping. Adjustable flow control and manual override are available. The valve can be either bottom drilled for manifolding or tapped for standard connection (1/8 or 1/4 NPT). *Airmatic Valve, Inc.*

... FOR MORE DETAILS, CIRCLE NO. 305

## NEW INTERNAL EXPANDING 5 IN. BRAKES

... for standard small gas engines or motors



Compactly constructed so that designers may specify a more simplified design in original equipment, the new internal expanding brakes are space-saving and may be used on either live or stationary axles. The brakes lend themselves to varied methods of installation, depending upon preference and vehicle construction.

For quicker, easier installation, mounting plates are uniform. Mounting plate bolt circles are 3 in. diameter and positioned to accommodate flange type bearings, if desired. Rugged in construction, the brake is designed to provide more dependable control. It is actuated by a lever and linkage system. A lever actuated cam forces the lined brake shoes apart and against the inside of the revolving brake drum. Springs return the brake shoes to their original position when the pressure on the lever is released. *Fairbanks, Morse & Co.*

... FOR MORE DETAILS, CIRCLE NO. 306

## SMALL SELF-PRIMING PUMP

... capable of handling 300 gallons per hour

Available for 6, 12, 24 or 32-V DC operation, this newly developed small pump is intended for marine or general purpose applications. Features include a bronze body, stainless steel shaft and Neoprene or Hycar impellers. Hycar is specially compounded to provide greater resistance to oils and oil-contaminated water. Motors are 1/12 hp totally enclosed and moisture-proof. The pump weighs 5 1/2 lbs and has a 3/4 in. garden hose port connection with 3/8 in. pipe inside thread. *Proven Pumps, Div. Western Brass Works*

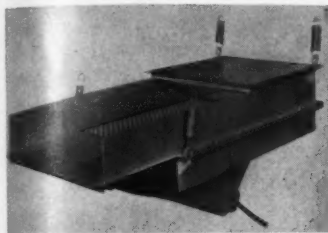
... FOR MORE DETAILS, CIRCLE NO. 307

WESTERN INDUSTRY/AUGUST 1960



## VIBRATING SCREEN FEEDER

...moves and sorts materials in one operation



These versatile feeders and conveyors to separate mixed loads of solid materials, or solids and liquids, move them to collection points and deposit them in separate containers. The feeder pictured moves and separates sand from gravel. A pneumatic vibrating drive located under the feeder vibrates both the lower and the upper tray which is a porous steel screen. Rapid vibratory action sifts the sand from the gravel in the upper tray. This same action moves both sand and gravel along the trays to individual bins. The units may be either floor mounted or suspended. Springs are used only to supply flotation. Feeders and conveyors of this type may also be used for rinsing parts or cooling parts with liquids. *Cleveland Vibrator Co.*

... FOR MORE DETAILS, CIRCLE NO. 308

## ALUMINIZED GLOVES

... for work with high temperatures

Three new types of gloves, designed to reflect 90% of all radiant heat in work where high temperatures are involved, have just been placed on the market. The gloves have leather palms and aluminized asbestos backs and thumbs which make them particularly suitable for welding and cutting operations, furnace work, or any other operation where extreme radiant heat is an important factor in efficient operation. The backs of the gloves are a combination of asbestos and a special heat resistant fabric. Material similar to the aluminized fabric used on these gloves has been employed in the manufacture of the suits which will be worn by the Astronauts. Extremely flexible, the material is light, fully insulating and will neither crack nor peel even under the severest working conditions. The gloves come in three styles; a five-finger carpincho leather glove; a one-finger mitten of green heat-resistant leather; and a five-finger glove of green heat-resistant leather. They are available either lined or unlined. *Air Reduction Pacific Co., Div. Air Reduction Co.*

... FOR MORE DETAILS, CIRCLE NO. 309

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**DAYTON FOUNDRY**

HOLLYDALE, CALIFORNIA

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## THE SWING IS TO "Dixylon!"



## Revolutionary, All-Synthetic Belting Is Proving Superiority In Application After Application

Dixylon has established new concepts in belting performance, value, versatility ... the swing is to Dixylon for heavy and light power transmission, for high speed, machine tool drives, printing tapes, spinning tapes, conveying belts, numerous other uses. Check these advantages ...

\***Stretch-free**—runs for years without idlers or take-up.

\***High Tensile Strength**—very thin Dixylon belting can be used at amazingly high speeds, and for small pulley diameters.

\***Great Durability**—gives long, maintenance-free service life.

\***Non-Slip**—high frictional coefficient ... no belt dressing required.

\***High Resistance** to oils, greases, most acids. Non-absorbent.

**A Special Dixylon Plus Value ... Can Be Made Endless  
In Minutes Without Lacing Or Sewing—**

The speed and ease with which Dixylon can be joined saves downtime, reduces need for carrying large stocks of endless belting.



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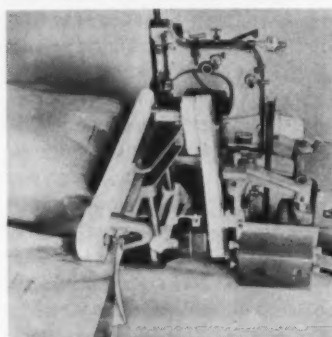
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## SEWING ATTACHMENT

... to speed and ease bag closing



The development of a new sewing attachment to simplify and speed closure of multiwall paper shipping bags has been announced. The attachment, which is mounted on the sewing pedestal, permits the bag to adjust itself properly before engaging the sewing machine, consumes less operator time by actually carrying the bag to the sewing machine, and reduces thread and needle breakage. An operator simply guides the filled bag into the co-acting V-belts of the attachment. From that point, the bag is automatically fed into the sewing machine. The attachment enables the sewing machine to effect a neater and more secure closure than by direct feed methods and allows an inexperienced operator to obtain high efficiency on the packaging line. Bemis Bros. Bag Co.

... FOR MORE DETAILS, CIRCLE NO. 310

## SMALL STARTER

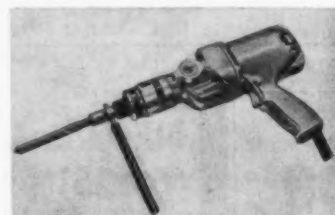
... now available as standard item

A low priced, compact size 00 starter as part of a standard line has been made available. Dimensionally small in size (5 3/4 in. W. x 7 in. H. x 4 3/16 in. D.), the size 00 is a magnetic, non-reversing starter which will satisfy approximately 40% of all general purpose applications up to 2 hp better and more economically than larger starters. Designed for use with both polyphase and single phase motors, the size 00 is available either as open type or in a NEMA Type 1 enclosure. Cover control offered consists of "Reset" only; "Start, Stop-Reset" and "three position selector switch." As an optional feature, kits are available for field converting "Reset" only starters to "Start, Stop-Reset" or "three position selector switch." Cutler-Hammer

... FOR MORE DETAILS, CIRCLE NO. 311

## ELECTRIC HAMMER

... with blow adjustable to suit any job



New model 1/2 in. capacity electric hammer has been introduced that is perfectly balanced, weighs 6 1/2 lbs. and is 12 in. long overall. The hammer impact blow is quickly adjustable from light to medium to heavy to meet a wide variety of job requirements. Force of blow adjustment remains constant until manually reset. Hammer action stops and motor idles when tool is not actually in work assuring increased tool life. The tool is especially suitable for drilling concrete, for setting self-drilling anchors, for scaling, chipping, chiseling, tuck-pointing, and removing weld spatter. Milwaukee Electric Tool Corp.

... FOR MORE DETAILS, CIRCLE NO. 312

## INDUSTRIAL BELTING

...an all-synthetic that is resistant to oil and grease

This newly developed flat belting, Suplex, is described as retaining its coefficient of friction even when large quantities of oil or grease are present. In one test, belting installations on a battery of #00 Brown and Sharp screw machines practically eliminated need for belting maintenance and after a year none of the original belts have required replacement. Suplex belting is readily joined by a simple method of heat sealing without lacing or sewing. It can thus be fitted on the job to the drive, or repaired in a few minutes. *R. & J. Dick Co., Inc.*

... FOR MORE DETAILS, CIRCLE NO. 313

## COBALT-BASE HIGH-TUNGSTEN SUPERALLOY

...has excellent high temperature strength and ductility



A newly improved WI-52 cobalt-base high-tungsten superalloy that possesses greatly improved high temperature strength in the 1800-F range with good ductility and corrosion resistance is now available in both shot and ingot form. Improved refining techniques and precise control of the important alloying elements have

increased 1800F stress rupture life by 18% and rupture elongation by 160% over previous alloy variations. Acceptance tests at 1800F and 15,500 psi, on 10 recent production heats, show an average stress-rupture life of 73 hrs. with an average stress rupture elongation in 1-in. of 17%. This air-melted superalloy has excellent castability and foundry characteristics. Its primary use has been for investment-cast aircraft gas turbine parts such as vanes and blades. *WaiMet Alloys Co.*

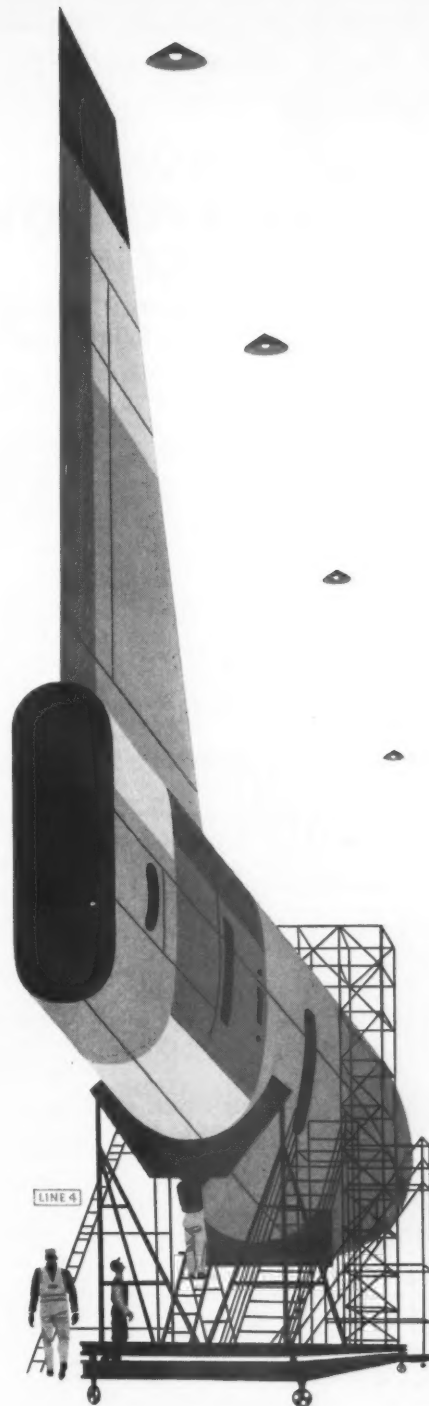
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## HIGH SPEED HYDRAULIC PRESS

...for the stamping industry; 600 strokes per minute

A high speed 25-ton hydraulic press has been announced. Designed for high speed progressive stamping operations, the new unit is a vertical frame, four-column design platen press, equipped with a No. 3-6-1/2 Littell roll feed, stock oiler and variable speed straightener. Bed area between guide posts is 20 x 20 in. There are a variety of optional bed bolster plates available. Daylight area is 13 in. which can be mechanically adjusted with a screw thread a total of 3 in. The press contains a closed circuit hydraulic system, servo drive, with harmonic cam drives for work strokes of 1/4, 1/2, 3/4, 1, 1 1/2, 2 and 3 ins. Cams can be varied to permit special work strokes. An important feature is that the number of ram strokes can be changed while the machine is cycling. Pressures can also be changed while the machine is in operation. *Denison Engineering Div., American Brake Shoe Co.*

... FOR MORE DETAILS, CIRCLE NO. 315



## Aircraft

...another great Southern California industry that utilizes the modern, complete banking facilities and specialized experience of California Bank

**CALIFORNIA BANK**

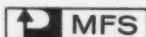
MEMBER FEDERAL DEPOSIT INSURANCE CORPORATION

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Ask Pacific Scientific about it...!



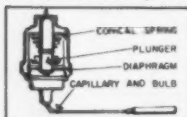
## New PARTLOW



**GIVES SUPER ACCURATE TEMPERATURE CONTROL**



Harnessed Power—Mercury's power easily does all work by itself!



Fool-Proof Design—No extra parts to get out of order. Element is simple, rugged, precision made.

For instant response to keep temperature variations at a minimum, the Partlow MFS is accurate within  $\frac{1}{2}\%$  of 1% of scale range. Dial readings are accurate, too. A magnified pointer provides fine settings. Two hairlines on the pointer prevent parallax error, give foolproof sighting.

Design is simple, straightforward. No electronic gadgets, delicate levers or hairsprings to break when jarred. Mercury actuated, action is positive, dependable. Field service is easy. With only a screwdriver, the control element can be changed in minutes' time at the job site. Dust and moisture proof, the rock hard MFS case can be flush or surface mounted. A neutral finish harmonizes with any control panel.

It's a fact—no control can match the Partlow MFS for unfailingly accurate performance under all conditions. The MFS comes in 10 different ranges, from  $-30^{\circ}$  to  $1100^{\circ}\text{F}$ . For field testing or full information contact Pacific Scientific Company now.

**Pacific** TRADE MARK

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## Babbitt Adjustable SPROCKET RIM

with Chain Guide

**CHANGES THAT DANGER ZONE TO A SAFETY ZONE**



... cuts costs when you

### SIMPLIFY PIPE LAYOUT

When you modernize to make money, go all the way. Cut piping costs to minimum with planned simplification. Give your staff a free hand to effect economies ... at the same time, convert Danger Zones to Safety Zones. Equip every overhead valve wheel in your plant with Babbitt Adjustable Sprocket Rims with Chain Guides.

- They simplify pipe layout.
- They fit any size valve wheel.
- They are easy to install and operate.
- They operate any valve from the floor.
- They save time and money.
- The first cost is the only cost (no maintenance).
- They are packed completely assembled (one to a carton), with easy-to-follow instructions.
- A hot-galvanized rust proof chain is available for all sizes.

Babbitt Adjustable Sprocket Rims with Chain Guide are carried in stock by most mill supply houses. Just phone your mill supply salesman, or contact us direct.

**Babbitt STEAM SPECIALTY CO.**

13 BABBITT SQUARE, NEW BEDFORD, MASS., U.S.A.

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## SPEED REDUCERS

... provide wide selection of ratings



The new Model 221 Optimount reducers and ratiomotors extend the ratings of these helical geared speed reducers to meet increasing needs for drives in the lower power range. Like the larger models, the 221 size is available

horizontal or vertical base mounted, or shaft-mounted, to meet any mounting conditions, from stock and ready to install. *Boston Gear Works.*

... FOR MORE DETAILS, CIRCLE NO. 316

## ELEVATING TRUCKS

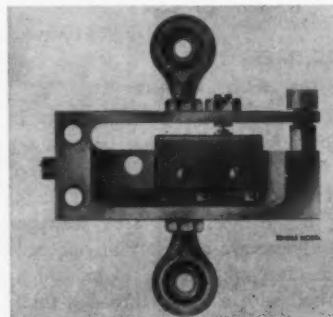
... have 33 per cent more load capacity

A new line of battery-powered portable elevating trucks that provide up to 33% more load and load length capacity have been developed. The line includes 24 models, tripling the number of battery-powered units the company made formerly. Twelve of the new models are rated for lifting 150-lb. loads that are up to 32-in. in length. The other 12 feature 2000-lb. load capacities and 24-inch load lengths. Design changes incorporated into the new trucks provide more heavily constructed forks and heavier hydraulic cylinders. An all-welded steel frame, with alloyed steel construction in the lifting channels, gives the unit excellent durability under strenuous operating conditions, according to the manufacturer. Safety features include dual floor brakes with 12-in. braking area, plus a built-in lowering valve in the hydraulic system which eliminates the danger of sudden or rapid lowering of a load. Two heavy-duty roller leaf type chains on dual sheaves support the fork carriage. *American Pulley Co.*

... FOR MORE DETAILS, CIRCLE NO. 317

## FORCE CONTROL SWITCHES

... sub-miniature in size; tensile and compression types



These tiny new sub-miniature force control switches are designed for industries using conveyor and transfer lines, automatic processing machinery or tape programming. Automatic starting and stopping of motors, activating of equipment in sequence,

tripping of relays and registering of warning sounds or visual signals are typical of the many applications. Their versatility and sub-miniature dimensions allows mounting in the most crowded quarters. Weight is  $\frac{1}{4}$  ounce and accuracy is within  $\frac{1}{2}$  of 1%. Three different capacities are offered in the sub-miniature line: 0-5 lbs., 0-30 lbs. and 0-100 lbs. *W. C. Dillon & Co., Inc.*

... FOR MORE DETAILS, CIRCLE NO. 318



## PACKAGED LIQUID CHILLERS

...six new units added to line

Newest additions to line of packaged liquid chillers are 8, 10, 15, 20, 25, and 30 ton units. Equipped for operation with three types of condensers: water cooled, evaporative and air cooled, these new products are designed for use in any type of chilled liquid systems. Each unit is factory engineered, assembled and test-operated to provide a perfectly balanced refrigeration system. They are easily installed and require only piping and power connections for immediate use. Typical applications include temperature control in electroplating tanks, cooling of cutting and quenching oils, and cooling of injection molding machines. Crane Co.

... FOR MORE DETAILS, CIRCLE NO. 319

## HIGH CAPACITY FLEXIBLE COUPLINGS

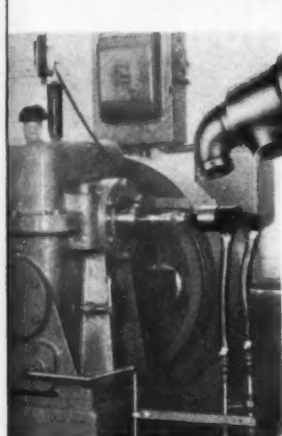
...shaft rated to permit selection by shaft diameters

Shaft-rating is a new development that eliminates multiple calculations when ordering flexible couplings. Only the diameters of the shafts to be coupled need be known in order to select the correct coupling.

All working parts are high-tensile steel, heat-treated to provide higher torque capacity and longer service life. The couplings are available in both finished bore and taper-lock bushed types in stock sizes. 1,155 different shaft diameter combinations can be accommodated. Finished bore couplings are also supplied for reboring to accommodate non-standard shafts in any diameter from 7/16 in. to 6 1/8 in. Diamond Chain Co.

... FOR MORE DETAILS, CIRCLE NO. 320

## The ROTARY UNION\*



### The Automatic Rotating Seal

The ROTARY UNION automatically compensates for misalignment

and wear, and automatically adjusts to variations in line pressure. Because it maintains its precision mechanical seal at all times, it outperforms and outlasts all similar equipment, and saves you money.

Over 40 standard types and sizes of ROTARY UNIONS cover almost every application where rotating equipment must be heated or cooled. Pipe sizes 1/4" through 5".

Write for Bulletin 700.

\*Trade Name - Patented

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## INDUSTRIAL AIR PRODUCTS CO.

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A portable racking system for completely elastic storage.

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WESTERN INDUSTRY/AUGUST 1960



# WESTERN INDUSTRY NEWS

THE INDUSTRIAL WEST . . . ON ITS WAY

PLANTS • PRODUCTION • DISTRIBUTION • PERSONNEL

## Alaska Lumber & Pulp Dedicates New Mill

SITKA, ALASKA—A \$66,000,000 monument to Japanese-U. S. cooperation in developing the timber resources of Alaska was formally unveiled here recently.

Some 44 Japanese industrialists attended the ceremonies for the Alaska Lumber & Pulp Co. mill which is located on Sawmill Creek near here.

Working through the U. S. State Dept., the company obtained cutting rights on 5¼ billion board foot of timber on Baranof, Chicagof and adjacent islands. Japanese and American money went into its building with the lion's share, or some \$36,500,000 coming from Japanese interest.

Construction on the mill started in the fall of 1957.

Standing at the mouth of the Medvetchka River, the sprawling mill site is of the most modern design for producing dissolving pulp. The mill employs 440 men in the mill proper, 75 in logging operations and 150 work for independent loggers who supply the mill.

Original design of 340 tons daily production has been exceeded by an average daily production of 350 tons.

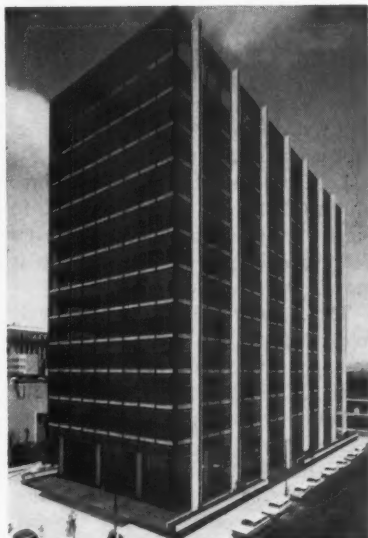
## 325-Acre Industrial Park For Seattle

SEATTLE—Groundbreaking took place recently on a 325-acre tract southeast of Seattle to be developed as a park for light industry.

Puget Western, Inc., developing the industrial park as a subsidiary of the Puget Sound Power and Light Co., is headed by *Frederick W. Kimball*. The park will be located along the west bank of the Green River.

Total investment in the land, utilities and buildings is estimated at \$60,000,000 to \$70,000,000. Kimball said a large eastern manufacturer has been signed as the first to locate at the park.

## Bethlehem's New Pacific Division Headquarters



This 15-story Bethlehem Building at 100 California St., San Francisco, is new Pacific Coast Div. headquarters of Bethlehem Steel Co. Unique feature of building is that supporting columns are outside. Building is equipped with seismograph to record response to earthquakes and windstorms.

SAN FRANCISCO—Marking Bethlehem Steel's fourth Western expansion during the past year, their Pacific Coast Div. recently moved into new headquarters here. The company's former offices at 20th and Illinois streets have been entirely taken over by their Shipbuilding Div.

An unusual feature of the new office building is the exterior columns which cradle the building outside and are free of the exterior marble and glass walls. From a structural standpoint, the design of the spandrel-girder-column connection is different than that known to exist for any present structure.

A guinea pig for structural-dynamic and seismological research, extensive instrumentation has been utilized to record the building's response to acts of nature. U. S. Coast and Geodetic Survey type accelerometer set-ups have

been installed as well as six interstory displacement gauges for measuring displacements between the 12th and 13th floors and between the sixth and 7th floors.

Bethlehem's other expansions in the West during the past year include the recent purchase of 575 acres of land immediately adjacent to their plant at South San Francisco; the installation of a new H-iron process at their Vernon, Calif., plant and a new plant-office building is currently underway at Seattle.

## Polymer's Whirlclad Completes Expansion

SANTA ANA, CALIF. — The Whirlclad Div. of Polymer Corp. at 3028 Oak St. here, has completed a 12,000 sq. ft. addition to its facilities according to a recent announcement by *Thomas C. Casey*, newly appointed district manager of the division.

Casey said this additional floor space provides a total of 24,000 sq. ft. of production and office space for the division. At the same time he announced the appointment of *L. F. Doyle* as technical sales representative to cover the division's territory encompassing the nine Western states.

Whirlclad produces plastic coatings on metal parts including vinyl, cellulose, nylon, epoxy, polyethylene and penton.

## Acme Steel Purchases Pittsburg, Calif., Site

PITTSBURG, CALIF. — A 10-acre site along the east side of the Port Chicago Highway near Shore Acres has been purchased by Acme Steel Co. for a future fabricating plant.

Acme's San Francisco district sales manager, *William Smythe*, said the site would be developed in a year or two. The acreage borders the Sacramento Northern Railroad tracks.



## R. C. Mahon's New Western Operation at Torrance



Front view of the R. C. Mahon Co.'s new \$3,500,000 administrative and manufacturing center for its Western Operation. Located at 2600 Monterey St., here, the self-contained facility complements the main Detroit location, occupies a 30-acre site and includes an 11,000 sq. ft. office building and a 200,000 sq. ft. manufacturing plant.

TORRANCE, CALIF.—Initially, the R. C. Mahon Co.'s new Western Operation will turn out building products and also do structural steel fabrication and erection work, according to *Walter G. Mitchell*, executive vice president and general manager of Mahon here.

Mitchell said the plant is also being equipped to make industrial equipment such as finishing systems, painting booths and special processing machinery. All production equipment, except for two small units, is completely new and in most cases, he said, has been specially adapted for the company's manufacturing.

The new plant is made up of four large bays and a narrower service bay, each laid out for different products and functions. Some 140-ft. to the rear of the Mahon-west office building is the building products bay, a completely equipped area over 400-ft. long and 80 ft. wide. Here, the Western Operation will produce most of the line of building products such as metal cur-

tain wall, floors, long-span deck, steel roof decks, and others.

Located at a right angle to the three production bays is the 100-ft. x 320-ft. long warehouse bay that facilitates easy servicing of all areas. Stock is moved by overhead cranes.

The structural shop is a completely integrated 500-ft. long bay and is equipped to do most steel fabricating work, from flame-cutting to welded or bolted assembly.

The 400-ft. long industrial equipment building is, as yet, not in full production. It will soon be fabricating paint spray booths, finishing systems, metal-cleaning equipment and special processing machinery.

Earlier this year, Mahon's Western Operation was licensed by Kaiser Aluminum and Chemical Co., Oakland, Calif., as exclusive fabricators and erectors of Kaiser's aluminum stressed-skin dome in their marketing area of the 13 Western states including Hawaii and Alaska.

## Golby Bag Company In Expansion Move

PORTLAND—The Golby Co., here, recently purchased a five-story 100,000 sq. ft. industrial building at S.E. Third and Ankeny. The company will completely remodel the building with recessed loading docks, modernized lighting and other features.

Estimated total investment in building, improvements and machinery will approximate \$500,000.

Golby makes burlap, paper, plastic and mesh bags to supply Northwest growers, packers and manufacturers.

## Dyna-Therm Chemical Completes New Lab

CULVER CITY, CALIF.—Completion of a new \$100,000 research laboratory by Dyna-Therm Chemical Corp. here was announced recently.

The new facility, located at the company's Plas-Kem division, is headed by *Elbert C. Davis*, vice president for research and development. The facility, with its testing and evaluating equipment, is designed to stimulate the company's growth in the fields of high temperature coatings, plastics, paints and plastisols.

## Convair to Build Space Radiation Research Unit

SAN DIEGO, CALIF. — Convair Div. of General Dynamics Corp. will build a space radiation research facility here to study radiation effects on electronic components, guidance and control systems for nuclear propelled vehicles.

An improved 3,000,000-volt electron/ion accelerator will be used as the source of radiation. A contract for the design and construction of the accelerator has been awarded to Radiation Dynamics, Inc., of Westbury, L. I., N. Y. Installation of the initial unit and checkout of equipment are scheduled for completion at San Diego in March, 1961.

*Dr. A. E. S. Green*, chief of physics for Convair-San Diego, is responsible for the facility program.

## Allbright's Becomes Welding, Sales Div.

RIVERSIDE, CALIF.—Allbright's a welding supply distributor serving Riverside and San Bernardino counties, became a new name and a new welding and industrial sales center Aug. 1.

*T. S. Huddleston*, assistant secretary and manager of the new division said the firm will subsequently be known as Welding and Industrial Sales, Div. of Allbright's.

Headquarters will be a new 50 x 150 ft. building, located on a 2½ acre site in the local industrial section.

Allbright's became associated with Linde Co., Div. of Union Carbide Corp. in 1931, distributing oxygen and acetylene and welding apparatus and supplies. In 1949 the firm expanded its welding business.

## Fluid Test Operation Added by Horkey-Moore

TORRANCE, CALIF. — Horkey-Moore Associates, a division of Houston Fearless Corp., announces expansion of their Testing Division facilities to include a fluids contamination analysis laboratory.

Part of the general expansion program in progress at the laboratories, the addition allows the fluids testing department a full range of tests for fuel and hydraulic equipment.

When completed, the testing division will include facilities for all phases of testing aircraft, missile, spacecraft and commercial fuels.



## Plan \$500,000,000 New City Near San Francisco

SAN FRANCISCO — Following recent ground breaking ceremonies, construction of an all-new \$500,000,000 city, developed and designed by two Los Angeles firms, is underway near here.

Raymond Dean Conwell, AIA, & Associates, planners, architects and engineers, have been commissioned to design the project which is being developed by Volk-McLain Communities Inc.

Located on 4,200 acres which will be astride both Alameda and Contra Costa counties, the 10-year development project to be known as the San Ramon Village will ultimately have a population of 100,000 persons.

Subsequent plans call for development of 150 acres of industrial property adjacent to the southern portion of the new community.

## Seattle Div. Kilsby Announces Expansion

SEATTLE—Doubling of inventories and the addition of 10,000 sq. ft. of warehouse space has been announced by manager *W. G. Hargesheimer* of the Seattle Div. of Kilsby-Tubesupply.

The expansion follows the recent merger of Tubesupply Co. of Seattle with Perry Kilsby Inc. of California, at which time the name of Kilsby-Tubesupply was adopted for the overall operation.

A major distributor of steel and aluminum tubing and piping, Kilsby-Tubesupply has operations in Seattle, San Francisco, San Diego and Los Angeles and sales representatives in Salt Lake City, Denver, Phoenix and Albuquerque.

## Edward Hines Lumber Completing Expansion

PORTLAND—The Edward Hines Lumber Co. mill at Westfir is nearing the end of a \$1,100,000 remodeling and expansion program which the firm undertook beginning in 1956.

The expansion has developed a full scale lumber and plywood manufacturing process from a green mill and planer operation. A new planer mill has been built, some \$450,000 has been invested in remodeling the sawmill, and another \$480,000 for modernizing the plywood plant.

Some 450 persons are employed at the Westfir operation.

## Alloy Steel & Metals Co. announces

that it is the first foundry licensed  
to make

**"T-1"**

high yield strength constructional  
alloy steel castings

(United States Steel Patent)

GOOD NEWS for the Western Metal Industry. Now Alloy Steel & Metals Co. can supply you with castings made from "T-1" Steel. Plate and bar stock of this remarkable constructional alloy steel have been in use for several years. Now it is available for the first time for castings. Its casting characteristics allow designers to take advantage of the physical properties without "over-design".

Alloy Steel & Metals Co. was selected as the first foundry to be licensed because of its outstanding performance in producing castings for defense projects.

### Outstanding Advantages of "T-1" Steel:

- A proven engineering material.
- Over 3 times the yield strength of structural carbon steel.
- Weldable without preheating or postheating.
- Exceptional toughness, even at subzero temperatures.
- Outstanding resistance to the combination of impact abuse and abrasion.
- Reduces ultimate costs.
- Reduces weight safely—as much as 25% to 50%.
- Outstanding for meeting ASTM Specifications A 148 and A 352.

*For complete information on "T-1" constructional alloy steel castings, send for new Engineering Bulletin No. 300-B.*

"T-1" is a registered trademark of United States Steel.



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Although the buyer of a gear stamped "AGMA" is assured of receiving a product that is guaranteed to meet certain standards, he is by no means relieved of the need to search for value. An AGMA gear should never fall below certain minimum standards of design, construction, ratings, etc., but considerable latitude exists among manufacturers of this association, and it will pay a user to thoroughly check and compare things like bearing life, gear brinell, face widths and diameters, shaft materials, case construction.

Lufkin welcomes such evaluations and gladly provides data to assist in making comparisons.

VIC FAWCETT  
 PACIFIC COAST MANAGER  
 GEAR DIVISION

**Lufkin** FOUNDRY  
 A MACHINE COMPANY

... for more details, circle No. 55

## Teco Inc. Expands Facilities at Burbank



BURBANK, CALIF.—A new contemporary exterior and interior for the headquarters of Teco, Inc., designers and builders of advanced aircraft seating systems, was completed August 1.

The company is undergoing an expansion of facilities under its new president, E. Gilbert Mason, formerly head of design for American Airlines. Teco has supplied over 50,000 seats for commercial and military aircraft.

An 18,000 sq. ft. new building was completed June 1 to fabricate the plastic Mason Chair, which the company said is a radical departure in air passenger economics and comfort. With expansions, covered area for design and manufacture of aircraft seating will total 56,000 sq. ft.

Teco recently completed a \$2,000,000 contract for seating for TWA's worldwide jet fleet.

## Standard Steel Building Sugar Plants for Export

LOS ANGELES—Standard Steel Corp. has received orders to build three Standard-Hersey cube sugar plants for export to customers in foreign countries.

Two of the cube sugar plants will be delivered to the Middle East, where they will be an important part of a new beet sugar processing factory now under construction.

The third cube sugar plant will be built for a sugar producer in Colombia, South America.

The equipment, to be built at Standard's plant here, is scheduled for completion and shipment before the end of the year.

## Springbrook Packing Adds to Facilities

NEWBERG, ORE.—The Springbrook Packing Co. has announced plans to add approximately \$130,000 in new facilities this year, according to a recent announcement by officials of the packing cooperative.

The new expenditure includes a 12,000 sq. ft. canned goods warehouse, additional bean processing equipment and plate freezers for freezing packaged vegetables.

## Hexcel Products Acquires Applied Plastics Firm

BERKELEY—Hexcel Products Inc., local manufacturer of honeycomb materials, has purchased the assets of Applied Plastics Co., Inc., of El Segundo, Calif., according to an announcement by Roger C. Steele, Hexcel president. APCO is a producer of resinous products: adhesives, coatings, foams and hardening systems for epoxy resins.

APCO will be operated as a division of Hexcel Products Inc. under the direction of F. George Firth. Firth, founder and former president of APCO, becomes a vice president of Hexcel. The company markets its products nationally under the APCO label.

## Wood Fiberboard Co. To Make Duraflake

ALBANY, ORE.—"Duraflake" will be the trade name of a flakeboard produced by the Wood Fiberboard Co., here, according to an announcement by the company's sales division.

W. W. Affolter, sales manager, said the plant at full capacity will produce about four carloads a day. Duraflake, the first to be produced in the U.S. by the Bison method, was developed in Germany and is said to be strong, durable and smooth surfaced.

## Klamath Firm Moving To Ukiah, California

KLAMATH FALLS, ORE.—All manufacturing operations of the Klamath Machine & Locomotive Works, Inc., here, will be moved to Ukiah, Calif., according to John H. Thedick, vice president and general manager of the firm.

Designers and builders of equipment for the sawmill industry, Klamath Machine will consolidate manufacturing operations with those of the sawmill supplies division at Ukiah.

A program of automation in the company's machinery products will be adopted in the Ukiah plant, according to Thedick, who said the company will be assisted by Kaar Engineering Corp., Palo Alto, Calif., in electronics features required to build automated sawmill machinery.

## New Resin Extends Plastic Pipe Uses

SAN DIEGO, CALIF.—A new isopolyester resin, used successfully by Standard Oil Co. for refinery use, has been applied for the first time to the manufacture of plastic pipe, with outstanding results.

Officials of Reflin Co., here, plastic pipe manufacturer, and Chemical Process Co., Redwood City, Calif., have announced that a new isophthalic resin, originated by the latter firm, and now being used by Reflin in manufacture of its glass fiber, thermosetting, corrosion service plastic pipe, has overcome many previous temperature and chemical limitations of plastic pipe.

Reflin's president, Louis L. Poto-mac, says his firm's plastic pipe, made with the new resin, will operate satisfactorily in continuous duty up to 350°F., and will handle acids, alkalines, and many solvents with ease. Even difficult-to-handle hydrochloric acids and potash fluids up to 20% concentrations can be accommodated by the new pipe.

## Rayonier Plans New Buildings at Hoquiam

SEATTLE—Rayonier, Inc., will build a shops and stores building at Hoquiam, according to George A. Holt, Rayonier Grays Harbor Division manager.

The 32,000 sq. ft. building, to cost approximately \$375,000, will bring all the mill's shops and stores under one roof.

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When you want to load high gondola cars, feed high bins and hoppers or build higher stockpiles several "PAYLOADER" sizes with extra-long boom arms are available from which to choose. These special tractor-shovels provide dumping heights up to 15 feet and operating capacities up to 12,000 pounds.

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savings in time and costs over former methods.

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## Ellay Installs Huge Calender For Vinyl Sheeting



LOS ANGELES — A huge calender for producing vinyl sheeting and film, the only one of its size and type west of the Rockies, has been installed by the Ellay Rubber Co., 1308 East 12th St., here.

The machine can produce vinyl sheeting and film for a variety of uses in widths up to 60 in. and in thicknesses ranging from .002 to .020 in. The calender can also laminate in thicknesses up to .040 in. and can emboss rolls of sheeting and film with decorative patterns.

Made by Farrel Birmingham Inc., of Ansonia, Conn., the 243,000 lb. machine was so large that it was necessary to construct a 15,000 sq. ft. building around it.

Operation is highly automated making possible a maximum production of 50,000 lbs. of vinyl sheeting and film daily. The bulk of Ellay Rubber's business is in the manufacture of flexible, rigid and semi-rigid products for the Western market. The main supplier of raw material is the Dow Chemical Co.

## Am. District Telegraph Opens 2 Calif. Stations

SAN JOSE, CALIF.—American District Telegraph Co. formally opened two new central stations in California during June and July, one in San Jose and the other in San Diego.

In San Jose, a specially constructed earthquake-proof ADT alarm center provides electric protection services for 131 commercial and industrial subscribers.

The new San Diego headquarters safeguards more than \$45,000,000 worth of property in the area.

## Electro Engineering Starts New Division

SAN LEANDRO—Acquisition of a manufacturing plant in Forestville, Calif., to house Electro Engineering Works' new division for miniature encapsulated and resin-potted transformers, has been announced by W. W. Wahlgren, president. Electro Engineering Works manufactures transformers for industrial and military electronic applications.

## Bivans Conveyor Co. Expansion Underway

LOS ANGELES — Details of a \$200,000 facilities expansion program at Bivans Conveyor Co., here, were announced this month by Ronald B. Coleson, executive vice president.

Bivans' first large scale expansion program since its formation in January is planned to meet expanding requirements for conveyors and machinery.

Coleson said that the acquisition of three factory buildings adjacent to the present unit at 2431 Eads St. will raise covered factory area to 14,000 sq. ft. A complete machine shop, welding, steel forming and fabricating shop, engineering department, and sales and administrative offices are being installed in the new unit.

A new 100 ton press, a 12 ft. brake and a heavy-duty iron worker are among the pieces of equipment the company is installing.

## UC Offers Packaging, MH Short Course

LOS ANGELES—A short course in packaging, plant layout and material handling to be held at the University of California Conference Center, Lake Arrowhead, Calif., September 25 through 30, is being offered again this year.

The concentrated short course is designed for middle and operating management and executives charged with the responsibility for initiating industrial packaging, material handling and plant layout programs, both military and commercial.

For additional information concerning the program, write or call Engineering Extension, Room 6266G, Engineering Building, Unit II, University of California, Los Angeles 24, Calif., GRanite 3-0971, Extension 9877 or 369. TWX: West Los Angeles 6705.

## Northern Utilities Co. Extends Distribution

CHEYENE, WYO.—Northern Utilities Co. has been granted permission by the Wyoming Public Service Commission to extend and enlarge its natural gas distribution system in the Lander and Riverton areas.

The firm plans \$175,000 construction program to build the transmission line.

## Packard Bell Dedicates Museum of Electronics

CONEJO VALLEY, CALIF.—Packard Bell Electronics Corp. recently officially opened the doors of a new 53,000-sq.-ft. building in the company's 100-acre Electronics Park, dedicated a permanent Museum of Electronics History in the new facility, and heard Raymond Moley declare "Nothing can destroy America but the following of false gods and false economic theories."

Nearly 200 civic, government, industry and military dignitaries attended the dedicatory program and luncheon in Newbury Park, here, highlighted by the introduction of a robot master of ceremonies. Packard Bell's new general-purpose computer performed the function with microsecond speed in conjunction with an automatic typewriter and closed-circuit TV.

President Robert S. Bell accepted from Mrs. Lee De Forest for the museum one of Dr. De Forest's original three-element amplifier tubes, invented in 1906 by the "father of radio."





Visitors to the 1960 WESCON Show will have an opportunity to visit some 1000 booths similar to these which are a part of the 1959 show.

## 1960 Western Electronic Show & Convention

Highlights include 1000 exhibitors, 44 technical sessions, 8 plant trips, and all-industry luncheon

The 1960 WESCON Show & Convention opens in the Los Angeles Memorial Sports Arena, Exposition Park on August 23 and continues through August 26. This WESCON event is a joint effort of Western Electronic Manufacturers Association and the Institute of Radio Engineers. It is held annually and alternates in location between Los Angeles and San Francisco.

The Show will contain approximately 1000 booths. In addition to the usual exhibit space a square tent structure containing 56,000 square feet of

floor space will be erected. Measuring 140 by 400 feet, it will be fully air conditioned.

New innovations in registrations, issuance of guest badges and tallying of attendance will keep traffic flowing smoothly at the Show. This will be done by electronic counters in the registration area. Since an attendance of some 40,000 is expected the electronic equipment is necessary to keep a constant count of registration by day and cumulatively.

The Show opens every morning at 9:30 a.m. On Tuesday and Friday it closes at 5:00 p.m. and on Wednesday and Thursday it closes at 9:00 p.m.

Rear Adm. Joseph A. Jaap will be feature speaker at the important all-industry luncheon on August 26.

The luncheon, traditional climax event of the four-day WESCON activity and one of the major speaking platforms of the electronics industry, will be held in the Pacific Ballroom of the Statler-Hilton Hotel.

### FIELD TRIPS

A program of eight important field trips with some novel methods of briefing touring technical men, has been set up.

Materials concerning the operations of each of the installations to be visited will be distributed during bus trips, and verbal briefings will be presented in advance.

Both research and manufacturing facilities will be covered in the four-day schedule of field-trip events, with

strong attention given to operations that are unduplicated outside the southern California electronics complex.

The trip schedule includes:

Tuesday, August 23, 1 p.m.: Jet Propulsion Laboratory and California Institute of Technology (both Pasadena).

Wednesday morning, August 24: Space Technology Laboratories (developmental laboratories for earth satellites and space probe vehicles).

Wednesday afternoon: Packard-Bell Electronics and Telemeter Magnetics Corp. (both West Los Angeles).



Rear Admiral Joseph A. Jaap, Director of Development Programs in the office of the Chief of Naval Operations, will be feature speaker at the all-industry Luncheon on August 26 at the Statler Hilton Hotel, Los Angeles.



Richard G. Leitner of System Development Corp. and Chairman of 1960 WESCON technical program committee is one of two men responsible for the excellent 1960 program.



WESCON Directors visit the Sports Arena where show will be held. Directors are left to right: Calvin K. Townsend, A. J. Morris, John V. N. Granger, Bruce S. Angwin, convention director, and Walter E. Peterson, board chairman. Other board members, not pictured, are Hugh P. Moore, executive committee chairman; Donald Duncan, show director, and O. H. Brown.



Ramo Wooldridge's new West San Fernando valley plant, one of show places covered by plant trips during the WESCON Show.

Wednesday evening: System Development Corp. (Santa Monica).

Thursday, August 25, 8 a.m.: Rocketdyne Division of North American Aviation Inc. (Chatsworth).

Thursday, August 25, 1 p.m.: Radio Corp. of America and Thompson-Ramo Wooldridge (both West San Fernando Valley).

Thursday, August 25, 1 p.m.: In-

ternational Telephone and Telegraph, Librascope Division of General Precision, Computer Measurements (Glendale-Burbank).

Friday, August 26, 8 a.m.: Hughes Aircraft research laboratories (Malibu).

A total of 44 technical sessions will be held this year. In addition 4 workshops have been added featuring panel

discussions of important topics. This year for the first time a Woman's session has been added. Two hundred technical papers will be read during the sessions.

Twenty-five examples of outstanding product design in electronics as selected by a jury of outstanding industrial designers will make up the second annual Industrial Design Awards program at the 1960 Western Electronic Show and Convention.

The products and systems, chosen from entries from across the nation, will be presented in their own Sports Arena exhibit area. Five of the total, all of which have already earned certificates of merit, will be named "excellent" at show time.

The jury was made up of widely known designers and electronics industry advisers, including George Walker, vice president for styling of Ford Motor Co.; Henry Keck, Henry Keck Associates; Harry Greene, Merendino and Greene; Bert Gasteneau, Aerojet-General; Wilson Bradley, Endevco; Frank Gianninoto, Frank Gianninoto Associates Inc.; George Jergenson and Strother MacMinn, both of Art Center; and Thomas D. Tweedie, Lewis and Tweedie.

Their selections include a "family" of four instruments designed for the Decker Corp., Bala Cynwyd, Pa.; the Ampex FR-600-magnetic tape recorder/reproducer; a Beckman laboratory potentiometric recorder; Librascope's RPC 4000 electronic computing system; the Eitel-McCullough X762B power triode; a precision standing wave detector by DeMornay-Bonardi. Also included are the Beckman 210 high-speed data processing system; the N-2 signal generator produced by Southwestern Industrial Electronics Co.; the Bendix G-20 data processing system; GE's 312 digital control computer; the Minicom CM-100 video band recorder.

Other items to be exhibited include Ramo Wooldridge's standard cabinet design; the Librascope 210 XY plotter; P. R. Mallory's voltage reference battery; a Voltron voltmeter; a traveling wave tube produced by Huggins Laboratories; a Hewlett-Packard variable attenuator; an Eimac X778 traveling wave tube; an Amphenol micromod connector; an XY plotter by Electro Instruments Inc.; a Corning NF fusion-sealed resistor; and an Ampex TM-1 digital tape handler.

## Southland Business Gains in Six Months

LOS ANGELES—The Research Dept. of the First National Bank reports that business activity in Southern California moved moderately upward during the first six months of 1960 with employment, income and retail sales reaching new peak levels.

Compared to the first half of last year, the bank's local business index averaged 3½% higher.

Population growth in the Southland, according to the report, appears to be at the rate of nearly 1,000 persons daily with the total having passed the 10,000,000 mark during the second quarter of the year.

Personal income in California was at a seasonally adjusted rate of \$42.3 billion per year during the first quarter, nearly 10% above a year ago. Total manufacturing employment averaged 2% higher during the first half of the year and total employment average 3.6% higher.

## Install Safety Systems At San Diego Airport

SAN DIEGO—To increase the margin of safety for airliners coming in to San Diego's downtown airport, Lindbergh Field, an electronic landing guide and a path of lights are being installed.

The new instrument landing system will give incoming pilots an electronic glide slope into the field. The system enables the pilot to line up his plane with the field long before the field comes into view.

The second installation, a lighting system, gives the pilot more time to line up his plane for a landing at the busy time when he is making the switch from instrument to visual flying. The 30 new light stations are spaced about 100 ft. apart.

## Alleman Co. Appointed D. H. McCorkle Co. Rep.

LOS ANGELES—The Fred F. Alleman Co., 1625 Blake Ave., here, has been appointed Southern California representative for the D. H. McCorkle Co.

Alleman will also serve as a warehouse center for McCorkle, Berkeley, Calif., makers of temperature control devices.

*"We need a strong stereo control panel" says Packard Bell*



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## Lyon Metal Products Expands Facilities

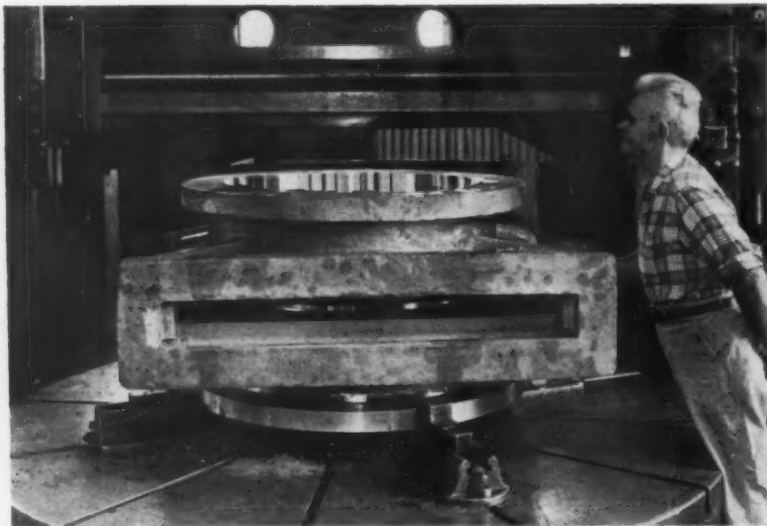


LOS ANGELES — Lyon Metal Products has recently expanded facilities at their City of Industry plant, 900 S. Turnbull Canyon Rd.

In addition to manufacturing and warehousing functions, the facility

houses the Los Angeles district sales staff. Located on more than 16 acres of land, the plant is located in a new industrial tract near downtown Los Angeles. *D. J. Black* is district manager.

## Huge Valve Produced in Los Angeles



LOS ANGELES—Completed last month at the Daniel Orfice Fitting Co. was the largest known valve of its kind, a 36-in. OD metering valve that will be used to meter the flow of coke gas in steel mill operations.

Steel castings for this fitting were made by the Kay-Brunner Steel Products Inc., Alhambra, Calif. Castings were produced and delivered in a rush program that only required 15 days

after receipt of patterns.

The melt, of carbon-moly composition, was prepared by electric furnace operations. Shipping weight of the unmachined body casting was 4934 lbs., while the top casting was 4248 lbs.

Machining operations for the body casting were done by Brown & Brown Machine Shop located at Compton, Calif.

## Yale Names Pacific Lift Truck Co. Southland Rep

LOS ANGELES—Pacific Lift Truck Co., here, has been appointed exclusive Yale representative in Southern California according to a joint announcement by *Horace H. Fritz, III*, president of Pacific Lift Truck, and *Louis W. Jander*, general sales manager of Yale Materials Handling Div., Yale & Towne Mfg. Co.

As franchised representative, Pacific Lift has assumed management of the former Los Angeles branch of Yale & Towne at 5711 E. Olympic Blvd. Pacific Lift will also operate the Yale San Diego sales and service location at 4410 Kearny Mesa Rd.

Other officials of the new company are *Jerry W. P. Schauffler*, sales manager, and *L. F. Ketter*, service manager.

## Hi-Shear Name Change Reflects Diversification

TORRANCE, CALIF. — The company name change to Hi-Shear Corp. effective Aug. 1, has been announced by *George S. Wing*, company president. Formerly known as Hi-Shear Rivet Tool Co., the high strength fastener manufacturing firm is located at 2600 W. 247th St., here.

Reason for the name change, Wing said, is to better portray the expanding line of Hi-Shear's proprietary products and diversified industrial interests as well as projected marketing plans. He pointed out that the same corporate management will continue and there is no change in the company ownership.

During the past year Hi-Shear completed construction and occupancy of additional factory and office facilities at its main plant at the Torrance Municipal Airport, permitting consolidation of other manufacturing facilities formerly located in Los Angeles and Inglewood. The newly enlarged Torrance plant occupies 112,200 sq. ft. of building area on 9.5 acres. An adjoining nine acres await future expansion.

Diversified interests of the parent company are reflected in its Transland Aircraft division. Here, a complete line of aerial applying equipment is made for the agricultural aviation industry. Also, a complete crop dusting airplane, the Transland Ag-2 has been designed, constructed and licensed at the Torrance plant.



## Irving G. King Branch To Serve Orange County

ANAHEIM, CALIF.—A new sales office and service facility has been opened by Irving G. King & Co., Southern California material handling distributors.

According to the announcement by Thomas A. Fitch, president, the company's new branch at 1112 C Raymond Way, here, will provide complete service for King customers in Orange County.

Ray Gagnon, a veteran of 12 years with the company, will be the new resident manager. King handles Tow-



At the opening the new Anaheim branch of Irving G. King & Co., left to right: Ray Gagnon, resident manager; Louis De Nardo, service manager; Leonard Reed, Jr., office and parts manager.

motor fork lift trucks; Barrett-Cravens electric trucks; Electrolift hoists; Lewis containers; Loomis dock ramps; Wright hoists and cranes; Downs hoist and crane accessories; Atlas racks and King magnesium ramps.

## Stauffer Plans Southern Calif. Chlorine Facility

LOS ANGELES — Stauffer Chemical Co. will build a captive chlorine plant in the Wilmington area of Los Angeles. Engineering is underway with completion of the plant scheduled for late next year. Stauffer's Engineering Dept. will be in charge.

Total chlorine output will be supplied to American Chemical Corp., jointly owned by Stauffer and Richfield Oil Co., as a raw material for the manufacture of vinyl chloride, ethylene chloride and ethylene dichloride. The co-product will be consumed by Stauffer.

Stauffer also has a chlorine producing plant at Henderson, Nevada.

## Gill Corp. Moves To New Facilities

EL MONTE, CALIF.—The M. C. Gill Corp., makers of fiberglass and honeycomb panels, has moved to a new, streamlined plant at 229 Easy St., here.

This is the fifth expansion by the firm in the past eight years. Gill Corp. makes fiberglass and plastic components and products for rockets and missiles, aviation, truck and trailer, the architectural and electronics fields.

## Ducommun Acquires Texas Distributor

LOS ANGELES—Acquisition of the McCormick Steel Co., Houston, Texas, by Ducommun Metals & Supply Co., here, was approved recently by stockholders of the Houston firm.

According to the announcement, the acquisition will permit Ducommun to participate in the growth of the rapidly expanding southwestern marketing area.

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## Ampco Metal Opens Huntington Park Foundry



Shown in progress are modifications being made to a recently acquired foundry at 6131 Maywood Ave., Huntington Park, Calif. On the West coast Ampco has been producing special-alloy sand and centrifugal castings up to 5000 lbs. Foundry operations are backed up with pattern and machine shops along with facilities for oxygen free copper forgings.

## Western Control Named Oak Electronics Rep

SHERMAN OAKS, CALIF. — Western Control Equipment Co., 14615 Ventura Blvd., here, has been appointed as sales engineering representatives in Southern California and Arizona by

the Oak Electronic Corp. of Culver City, Calif.

Oak Electronic is a subsidiary of Oak Mfg. Co., of Chicago, makers of rotary and push button switches, rotary solenoids, choppers, vibrators, tuners and variable capacitors.

## Dynatech Moves Into Santa Ana Facilities

SANTA ANA — Dynatech Plastics have started moving into the first unit of the company's \$250,000 plant here.

This first unit will house production, engineering and research facilities, Ray C. Wilcox, executive vice-president, announced.

The firm designs and produces custom injection moldings for commercial and industrial applications. Dynatech's Santa Ana plant is being equipped for production of thermoplastic moldings using the new Ankerwerk reciprocating single screw plasticising injection molding machines.

## Wheel Industries Rep For Le Roi Compressors

LOS ANGELES — The appointment of Wheel Industries, Inc., 3050 East 11th St., here, as a distributor has been announced by Le Roi Div., Westinghouse Air Brake Co., Milwaukee, Wis.

Wheel Industries will handle both the bedplate Le Roi "S2" stationary and the tank mounted "Unit-type" compressors sold under the Westinghouse trade name.

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## Metallurgical Installs Sodium Hydride Descaler

MAYWOOD, CALIF. — Installation of a new sodium hydride descaler has been announced by Metallurgical Consultants, Inc., 4935 E. Slauson Ave., here.

Designed and built in MCI's plant, the descaler is intended primarily for treating small parts such as fasteners and braze assemblies of limited size, according to John J. Lawless, Jr., vice president of the firm.

It will handle parts with maximum dimensions of 16x18x4 in. Capacity is approximately 260 lbs. per hour.

The descaler is considered especially useful in reducing discoloration, improving corrosion resistance and rendering metal surfaces clean and wettable for brazing, Lawless said. It treats metal parts in a sodium hydride solution at approximately 700 degrees F.

## New Regional Office For General Precision Div.

LOS ANGELES—GPL Division, General Precision, Inc. has relocated its West Coast sales and service headquarters in a new building, 7803 Lemona Avenue, Van Nuys, Calif., according to a recent announcement by J. M. Kees, manager of the Los Angeles regional office. Formerly the facility was in Pasadena.

The new office provides 7,000 sq. ft. of space housing a fully equipped sales, service and repair depot facility.

## Fluorocarbon to Move To New Anaheim Plant

SANTA ANA, CALIF. — Fluorocarbon Co., producers of fluoroplastics for aircraft, electronics and space-missile industries, will move its facilities here to new and larger quarters this month, according to Sandy Poteet, company president.

The firm's new plant, a single-level, contemporary brick building, will be located at 1754 South Clementine Ave., Anaheim, Calif. It will house administrative, sales and engineering offices as well as production department.

The facility will double their present space and provide an additional 15,000 sq. ft. of working area. This is Fluorocarbon's third move within the past five years.

## Shell Chemical Ups Styrene Production

TORRANCE, CALIF. — Shell Chemical Co. has awarded a contract for expansion of its styrene production facilities here. Styrene is a chemical intermediate used in making plastics and general purpose synthetic rubber.

R. C. McCurdy, Shell Chemical president, said that the expansion, scheduled for completion early in 1961, will raise the plant's capacity to 210,000,000 lbs. a year.

## Parker-Hannifin Opens International Division

CULVER CITY, CALIF. — The Parker-Hannifin Corp. of Cleveland has established an international division with offices here. Paul F. Smith, formerly head of the firm's Parker Seal Co. division here, has been placed in charge of the new division.

The international division will have exclusive rights to handle and service Parker-Hannifin products throughout the world, except the U.S. and Canada.

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Holding a tubular section made from SAE 1010 hot rolled and electric weld steel, Ken Abbott, sales manager, Van Huffel Tube Corp., describes expanding and beading operations without annealing that turns the blank in his hand into the complex 5-in. irrigation hub axle, center-foreground.



Bellows quality tubing made from type 321 steel is shown by Dick Bates, Airline Welding & Engineering, Gardena, Calif. Airline makes this two-ply tubing with a .007-in. wall.



Don J. Mackenzie in Trent Tube Co. booth. Under operation was a Budd/Metrol RADAC Model 302 electromagnetic tube inspection unit, left. Tubing with defects will cause an audible alarm and will register extent of flaw on oscillograph recorder. Speeds can be up to 500 fpm.



Intricate machining went into this winding unit for an in-flight refueling system. Made from 61 ST aluminum, it is held between Jim Compas, Jr., left, and Fred Sawitzky of Screw Products Corp. of America, South Gate, Calif.

## Kilsby-Tubesupply Holds Special Show On Tubular Products

LOS ANGELES—An estimated 2000 representatives of Western industrial firms attended a one-day Tube-O-Rama featuring displays of fabricated and assembled tubular products, late last month at the Kilsby-Tubesupply warehouse, 2501 S. Malt Ave.

More than 60 exhibitors participated in this localized trade show that concentrated on tubular items made from steel, aluminum and the super alloys.

According to R. Perry Kilsby, president of the sponsoring firm, the trade fair was designed to acquaint firms in the market for tubular products about the manufacturing potential of numerous local subcontractors and suppliers.

Exhibits held examples of swaged, forged, drawn, spun, formed and welded tubing in a wide range of shapes and finishes.

Attendance was by invitation only and was beamed primarily to designers, engineers, production and purchasing personnel.

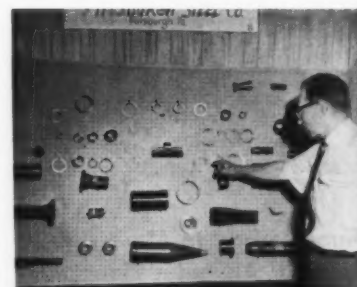
Show participants were divided into two categories, suppliers of tubular stock and those firms engaged in modification or use of tubular products as component parts.



Taking a bead on electric eye target that represents the correct answer, visitor to Tube-O-Rama participates in quiz conducted by Tubular Products Div., Babcock & Wilcox Co. Correct answers resulted in prize.



Getting a helping hand from Hayden Clement, Reynolds Metals Co., right, W. L. Relfe, left, and Joe Haney set up Kilsby-Tubesupply booth.



Pointing to tubing display sponsored by Pittsburgh Steel Co., John Wais describes tubing that presents drawing problems or difficulty in forming from solid blanks.



Tube drawing in miniature is accomplished by R. V. Mann, Pacific Tube Co. Scale model draw bench was producing rectangular and square-shaped tubing.



Giving out details on Republic Steel tubing is Bob Cubben who holds bright annealed tube section to the light for visitor to inspect finish.



## Hiller and Electric Autolite Talk Merger

PALO ALTO, CALIF.—Stanley Hiller, Jr., president of Hiller Aircraft Corp. here, and R. H. Davies, president of Electric Autolite Co., recently announced negotiations are underway to merge the two companies.

Hiller, active in the light helicopter field, is also prominent in vertical take-off and landing, VTOL, aircraft development and other military research projects. Hiller stated that he and his associates feel that the relationship with a company of Autolite's production, technical and financial strength would be highly beneficial in maintaining their position in the fast growing helicopter and VTOL aircraft fields.

Autolite, manufacturer of automotive and aircraft parts, believes, according to Davies, that Hiller offers a solid diversification that does not follow the automotive economic cycle and affords the company a better opportunity to participate in defense business.

Hiller will continue to operate as a separate unit although it is expected that Autolite's newly formed Aero Space Div. and Special Product and Research Div. will cooperate on research and development activities particularly in the areas of ceramics, electro-hydraulics, electronics.

## Daystrom to Acquire Wiancko Engineering

PASADENA, CALIF.—In its program of expansion, Daystrom, Inc., electrical-electronics manufacturer, has arranged to exchange a number of its shares for the outstanding stock of Wiancko Engineering Co., here, according to a joint statement issued by Thomas Roy Jones, Daystrom's president, and Thomas H. Wiancko, president of the local firm.

Jones stated that the special capabilities of Wiancko Engineering in pressure, acceleration and force instrumentation and measurement fill a gap in the Daystrom line of space and industrial components.

Wiancko, with sales running at the rate of \$5,000,000 annually, will be the seventh addition to Daystrom in recent years. Other Western acquisitions were American Gyro Corp. and Ford Engineering Co., Inc., of Los Angeles. Daystrom headquarters are at Murray Hill, N. J.



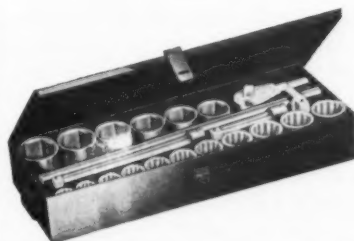
Husky, Extra-Heavy-Duty Loxocket wrenches add work-saving muscle to any tool kit. Wrench heads, sockets and handles are built for big, tough jobs. All units lock securely and will not come apart in use.

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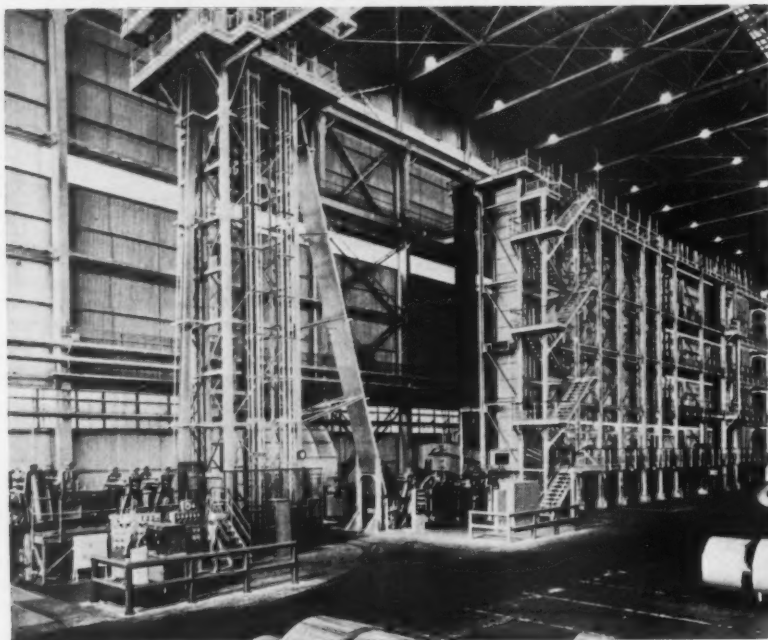
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## U. S. Steel Installs Continuous Annealing Line



Over 99 percent of the tin can comes out of the steel mill, tin contributing less than one percent for the tin coating. Here at U. S. Steel's Pittsburg Works at Pittsburg, Calif., a continuous annealing line has been placed into operation for heat treatment of strip steel before it is further processed for a protective coating of tin for can making. The Pittsburg Works feeds tin plate to California's canning industry which is heavily concentrated within a 100-mile radius of the mill.

PITTSBURG, CALIF.—Costing in the neighborhood of \$14,000,000, according to unofficial estimates, U. S. Steel's Pittsburg Works here has recently installed a high-speed continuous annealing line to help meet the needs of the Western canning industry.

The process was first installed in Gary, Indiana, in 1952 and Kaiser has had the process for about a year. Advantage of the continuous annealing line over the previously operated box annealing or batch type process, is that it gives the steel strip an extremely uniform degree of physical properties, making it ideally suited for modern tin plating methods and can manufacturing processes. Its use will require some changes in handling and equipment by the canner.

J. D. McCall, president of the Columbia-Geneva Div., U. S. Steel, pointed out other advantages of the new continuous annealing line are greater speed of annealing, use of fewer steel types and tempers, simplification of inventory, and greater strength of the completed container. Also, the line includes an electrolytic cleaner and scrubber, thus combining operations which were previously performed separately.

Most of the steel used for tin plate production at Pittsburg comes from the Columbia-Geneva plant at Geneva, Utah, in the form of hot rolled steel coils and plans for the future, according to company officials, is to install a hot strip mill to eliminate the shipping of coils from Geneva.

The furnace of the new 500-ft. continuous annealing line consists of a heating, holding, slow-cool and fast-cool section and a final cooling zone. From initial heating and on through the fast-cool zone, the process of annealing is carried out in a protective gas atmosphere to prevent oxidation. The strip is heated to as high as 1350 degrees F.

The finished tin plate is shipped to can manufacturers either in cut sheets or in coil form.

### Sunbeam Equipment Names Northern California Rep

SOUTH SAN FRANCISCO — The Matheson-Doherty Co., 225 Shaw Rd., here, has been appointed to represent the Northern half of the State of California by the Sunbeam Equipment Corp. of Meadville, Pa.

Sunbeam manufactures industrial furnaces and equipment.

## CF&I To Rebuild Tube Mill's Blast Furnace

PUEBLO, COLO.—Colorado Fuel & Iron Corp. officials announced recently the seamless tube mill's blast furnace will be rebuilt. It has been in continuous use since August 1953.

While acknowledging that 425 employees will be out of work for five to six weeks, officials said at least 130 have used part of the time to take paid vacations.

The facility is the only one of its type West of the Mississippi River.

Officials said that despite the temporary layoff, the Pueblo plant still is running 65% of capacity in contrast to 54.8% of capacity in the steel industry nationally.

Present employment at the plant is 7,925 compared to a usual average of 8,500.

## Plastiflex Co. Opens New Plastic Hose, Tubing Plant

VENICE, CALIF.—Plastiflex Co., manufacturers of reinforced plastic hose and tubing, has located in a new industrial tract adjoining the Marina del Mar boat harbor. The plant is equipped with special forming machines that produce hose and tubing specialties without use of mandrels.

Included in raw materials used are polyethylene, polyvinylchloride, and Teflon. Currently the firm is producing hose from 3/4-in. to 4-in. OD in any continuous length.

Industrial uses include commercial vacuum hose and petroleum vapor hose for vapor recovery during loading and unloading of tanks.

## Bullard to Distribute Hi-Viz Safety Paints

SAUSALITO, CALIF.—The E. D. Bullard Co., here, has been appointed as exclusive distributor of Hi-Viz, a new development in high-visibility safety paints. The paint is a product of the Fluorescent Product Div. of the Lawter Chemical Co.

## Singer Sewing Machine New Accounting Center

SALT LAKE CITY—Singer Sewing Machine Co. has let a contract to Garff, Ryberg & Garff Construction Co. for a new regional accounting center on Foothill Drive, which will cost more than \$370,000. It will replace the present center in the Darling Building, 17 West Broadway.

## Atomic Radio Light Developed at Hughes



LOS ANGELES—Man has created a source of "coherent" light for the first time in history, a new electronic device called a laser (from Light Amplification by Stimulated Emission of Radiation), a Hughes Aircraft Co. scientist has announced. Above Dr. Theodore H. Maiman of Hughes Research Laboratories, where the scientific breakthrough was achieved, studies laser's main parts, a light source surrounding a rod of synthetic ruby crystal through which excited atoms generate the intense beam. The laser projects the radio spectrum to 500,000 billion cycles, "lighting" the way for improved space communications and increasing the number of communications channels.

Dr. Maiman joined Hughes in early 1956.

## Atchley Acquires New Engineering Facilities

LOS ANGELES—A 6,120-sq.-ft. expansion has been announced at Raymond Atchley, Inc., of West Los Angeles.

The new space, added to the plant's present 30,000 sq. ft., is devoted almost entirely to private offices for each design engineer, according to Raymond Atchley, president of the firm, designers and manufacturers of servo-valves, automation systems and components.

The 35 air-conditioned, mahogany-paneled offices provide company engineers with quiet quarters, conducive to creative thinking, "Where they may grow to their own capabilities," explained vice president of engineering, Jack Pegram. The firm is a subsidiary of American Brake Shoe Co.

## Approve Salt Water Conversion Plant

SAN DIEGO—Terms of a co-operative agreement with the Federal government for construction of a salt water conversion plant on Point Loma, near here, were recently approved by the San Diego City Council.

According to City Manager George Bean, the city will build an access road and do rough grading for the plant, pay costs of pipelines from the plant, and buy the water it produces at 20 cents for 1,000 gallons.

## Electrovision to Acquire Air Cargo Equipment Co.

LOS ANGELES—Electrovision Corp., here has entered into negotiations for the acquisition of Air Cargo Equipment Co. of Glendale, according to an announcement by Martin Stone.

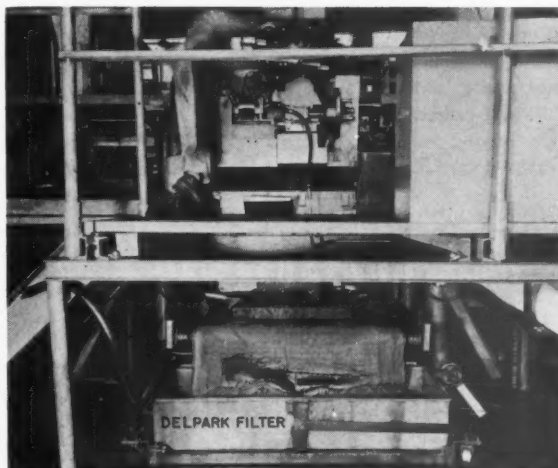
Air Cargo manufactures and markets ground support equipment used in the aviation and missile industries. The company also produces optical tracking telescopes and optical micrometers for microscopic measurement of flaws in various materials.

### MONTGOMERY BROTHERS, INC.

ENGINEERING DEPT.  
FIELD REPORT No. 4

CLIENT: A Large West Coast  
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PRODUCT: CFC Delpark Filters



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## MB Commercial Filters Corporation Delpark Filters Plays an Important Part in Grinding Operations at a West Coast Manufacturer

Heavy sludge loads, a major problem in coolant recovery, is handled for a large West Coast Company by a Delpark automatic self-cleaning filter. The application is on a large centerless grinder used in turning out hydraulic rams up to forty feet in length.

The Delpark is a continuous, self-cleaning gravity filter for the filtration of solids from liquids through a filter material. The filter media, fed from a roll, is mounted on an open flat endless conveyor with sloping sides and an inclined discharge ramp. Dirt laden coolant is fed into the filter material, the liquid passes through, the solids remain on the surface.

The many savings that can be realized by this filter will more than pay for its initial installation. Maintenance time, down time, better end product, and clean pure coolant, to name a few.

Let Montgomery Brothers help you solve your machine shop filter problems. Call or write to the filter division for technical literature or engineering assistance.



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## PG&E Asks Approval for 3 Power Expansions

SAN FRANCISCO — Three power project applications, representing expenditures totalling \$62,197,000 have been filed by the Pacific Gas and Electric Co. with the California Public Utilities Commission, according to *S. L. Sibley*, vice president and general manager.

The three projects, scheduled for completion in late 1962 and 1963, involve the replacement of two old hydroelectric powerhouses, the De-Sabla and Stanislaus Powerhouses; and the addition of a large third unit to a steam plant at the Morro Bay Power plant.

## Skyline Plywood Increases Warehouse Facilities

DENVER—Skyline Plywood and Lumber Co., 725 W. Bayaud Ave., here, has announced the opening of expanded warehouse and dock facilities, doubling the warehouse space, adding two new lumber sheds, and extending docks along one side of the warehouse. The firm serves the Rocky Mountain region.

## American Viscose Opens Western Packaging Dept.

LOS ANGELES — American Viscose Corp. of Philadelphia, has opened the first far western district sales office for its new Industrial Packaging Dept. here, and has named *Brad Hoyt* to the post of district manager, according to an announcement by *Robert K. Scharff*, general manager of sales, Industrial Packaging Dept.

Hoyt is headquartered in AVC's Film Div. sales office at 6333 Corsair St., here.

The first product of American Viscose's new Industrial Packaging Dept. is Avistrap Cord Strapping, a high-tensile rayon cord which represents a new idea in industrial packaging.

## Key Resistor Names Northern Calif. Rep

REDWOOD CITY, CALIF. — Kesco, here, has been appointed sales representative for Northern California and Nevada, excluding Clark County, for Key Resistor Corp., 321 W. Redondo Beach Blvd., Gardena, Calif., manufacturers of precision resistors, networks and power supplies.

## Dow Announces Atomic Facilities Expansion

DENVER—Contract has been awarded for a \$1,000,000 expansion of facilities at the Rocky Flats atomic plant west of Arvada, according to an announcement by *Dr. Leland I. Doan*, president of the Dow Chemical Co. which operates the plant as part of the United States' weapons development program.

He also announced that production at the plant is on a wartime basis. While he did not disclose the exact nature of the work there, he said the product was from uranium and plutonium, basic elements in the manufacture of atomic and thermonuclear bombs.

## Tricon Opens Office To Serve Bay Area

LOS ANGELES — *Henry W. Dewey*, president of Tricon, Inc., West Coast importers of steel from Europe, have announced the establishment of an office in San Francisco at 22 Battery St.

The firm imports tube and pipe, wire, plate, structurals, sheet and other steel mill items.

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**WESTERN INDUSTRY/AUGUST 1960**



## United Control Acquires Assets of Smith Florence

SEATTLE—United Corp. has announced acquisition of the assets of Smith-Florence, Inc., a firm specializing in the design and manufacture of laboratory and field-service instrumentation.

Howard H. Suskin, general manager of the parent organization, said an acquisition agreement had been approved by the United Control board of directors and the stockholders of Smith-Florence.

Smith-Florence is the third firm which United Control has announced as an addition to its corporate structure so far this year.

The latest acquisition, which is located in Seattle's Commodore Industrial District, will remain a separate organization, and will be headed by Robert E. Florence, one of the founders of the firm.

## Timpte Bros. Announce New Denver Facility

DENVER—Construction has begun at 5900 North Washington, here, to provide a consolidated facility for Timpte Bros. Inc. production, engineering and sales forces, according to an announcement by T. C. Timpte.

Timpte, president of the 76-year old Colorado truck and trailer body manufacturer, said the \$1,500,000 project to be built on a 20-acre site will be the most modern and efficient of its type in the industry.

The structures, 115,000 and 12,000 sq. ft., will replace the firm's old plant at 40th and York sts. Construction is expected to be completed by April 1961.

Upon completion of the new complex the firm will add some 150 administrative and production people. Timpte Bros. Inc. presently employs 300.

## New Warehouse For National Lead Co.

PORTLAND—A office-warehouse building for the National Lead Co. in the Guilds Lake area of northwest Portland is underway.

Estimated value is \$170,000. The 150x160 main structure will have attached a 30x70 ft. appendage housing store area and manager's and salesmen's offices.

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## Calif. Museum of Science Steel Making Exhibit



Bliss & Laughlin, Inc., officials, l. to r., Arthur Lehr, pres.; Carl L. Huff, board chairman; Fred J. Robbins, vice-pres. Pacific Coast Operations, view miniature steel-making machine at California Museum of Science and Industry, Exposition Park, Los Angeles. Lehr and Huff were visitors from company headquarters in Harvey, Ill.

LOS ANGELES — More than 700,000 persons saw the cold finished steel exhibit in the California Museum of Science and Industry, Exposition Park, here, during its first year ending last June 1, Museum officials announced recently.

The exhibit, portraying a thousand and one daily uses of cold finished steel bars, is sponsored by Sierra Drawn Steel Div. of Bliss & Laughlin, Inc.

The exhibit features a miniature draw bench 38 in. long, modeled from a huge 55-ft. bench in the Sierra Div.'s plant here.

The model is activated by the Museum visitor and goes through the motions of drawing raw material through super-hard dies to emerge as smooth, strong bars ready for market. Manufacturing processes and the history of cold drawn steel are described, and uses of metal are shown ranging from hairpins to parts for rockets.

### Pacific Pipe Appointed Aloyco Valve Distributor

SAN FRANCISCO — The Pacific Pipe Co., here, has expanded customer service facilities through its recent appointment as distributor for the products of Alloy Steel Products Co., Inc., Linden, N. J.

Pacific will stock the entire line of Aloyco corrosion resistant valves, servicing the Northern California area.

## Linde to Build High-Capacity Oxygen Plant

PUEBLO, COLO. — Construction is underway on new oxygen-producing facilities here, according to *William B. Nicholson*, president of the Linde Co., a Div. of Union Carbide Corp. The new on-site plant will supply more than 200,000,000 cubic ft. of oxygen per month to the Colorado Fuel and Iron Corp.'s plant here.

The new Linde installation will also be a vital factor in CF&I's planned \$21,000,000 expansion program. In addition to meeting the needs of the mill's present operations, the plant will furnish a continuous supply of oxygen in large volumes for the two oxygen converters now being built by CF&I. The converters, which can make steel in record time, will permit an increase of more than 30% in steel production.

## Stiehl & Co. Establish So. California Branch

BERKELEY, CALIF. — Stiehl & Co., manufacturers representative in Northern California, have opened a branch office at 7424 So. Garfield Ave., Bell Gardens, to cover the Southern California area.

Under the supervision of *C. Phillip Alexander*, the branch will service the Southern area for Pittsburgh Lector-dryer Div. of McGraw-Edison Co., makers of solid absorbant dryers for air, gases and organic liquids. They will also represent the Resistoflex Corp., Western Div., of Anaheim in their line of fluoroflex-T teflon lined pipe, fittings, transfer hose, thermowells and expansion joints.

## San Francisco, Portland Get Datamatic Offices

SAN FRANCISCO — Two new Western sales offices have been opened by Datamatic Div. of Minneapolis-Honeywell as part of a broad program for expanding and strengthening the field operations of Datamatic's Marketing Div. The offices will sell and service Honeywell 800 and 400 electronic data processing systems.

The Portland office is located at 2600 S. E. Belmont with *E. C. Athanasakos* as sales representative. *Dominick C. Nigro, Jr.* and *Clarence M. Davis* are the San Francisco representatives with offices at 2 Dorman Ave.

## GE Installs Computer at Arizona State University



PHOENIX — Examining the console of the million-dollar computer which was installed recently in the Computer Center on the Arizona State University campus at Tempe by the General Electric Computer Dept. are, left to right: *Dr. Truet B. Thompson*, professor in ASU's school of engineering; *Robert M. Shervem*, seated, Computer Dept.'s manager of the Tempe Computer Center; *Dr. Glenn D. Overman*, dean of ASU's college of business administration, and *Arthur G. Newman*, manager of employee and community relations for the Computer Dept. The group viewed the computer, known as a GE-304, at the Computer Dept. here where the all-transistorized, high speed, general purpose digital system is undergoing test.

The 304 can read more than 15,000 alphabetical characters per second, compared with human speeds of about 16 characters per second. It's high-speed printer can print 900 lines of numeric information per minute, about 45 double-spaced typewritten pages.

## Chemo Products Names New Los Angeles Rep

LOS ANGELES — The Service Cable and Wire, Inc., 2051 Pontius Ave., here, has been appointed to represent Chemo Products Inc. of West Warwick, R. I., makers of a complete line of products made from duPont teflon fluorocarbon resins.

They will represent Chemo in California, Nevada, Utah, Colorado, Arizona, New Mexico, Washington and Oregon. *Sidney Springer Co., Inc.*, 816 Stanford Ave., here, has long represented Chemo's line of coated glass yarns.

## Oronite and Japanese Firm Build Near Tokyo

RICHMOND, CALIF. — Oronite Chemical Co., here, and the Japanese firm, Nippon Petrochemicals Ltd., will build Japan's first detergent polymer and alkylate plant in Kawasaki, near Tokyo, on the east coast of Japan.

The multi-million dollar unit to be constructed near an ethylene plant operated by the Japanese firm is scheduled for completion by late 1961. A newly-created company, Nippon Petroleum Detergent Company Ltd., will operate the plant using Oronite patent licenses and know-how. Oronite has a 45% interest in the new firm..

The decision to build the Japanese plant, report Oronite officials, is based on thorough market studies which disclosed a fast-rising demand for detergent alkylate in Japan.

## Plan Pipe Fabrication Plant at Pasco Park

SEATTLE—Huico, a joint venture of Hoffman Construction Co., Portland, University Plumbing & Heating, here, and Industrial Contractors, Idaho Falls, expects to open a new pipe fabrication plant in October at Big Pasco Industrial Park, the war-time Army warehouse area that the Port of Pasco purchased last year.

Huico will install about \$500,000 worth of equipment, including a stress-relieving furnace. The firm has a \$6,500,000 contract for fabrication and installation of piping in the new plutonium reactor at Hanford. The pipe plant is expected to employ about 100 workers. The contract work will require about two years.

## Black & Decker Announce New LA Distributorships

LOS ANGELES—Master Power Corp., a Black & Decker subsidiary and manufacturer of portable air tools, has announced a change in its sales policy affecting the Southern California area.

Newly appointed distributors are: Frey Industrial Supply Co., Union Hardware & Metal Co., Machinists Tool & Supply Co., and Barker Foundry Supply Co. All four of the distributors are located in Los Angeles.

Formerly, Master Power's products have been handled directly by their own salesmen in the Southern California area.

## Wiley Electronics Co. Acquired by Giannini

PHOENIX—The Wiley Electronics Co., here, was recently acquired by the Giannini Scientific Corp. of New York City and Santa Ana, Calif., according to an announcement by Dr. Gabriel M. Giannini, president of the parent company.

Formerly a subsidiary of Savage Industries, Inc., Wiley Electronics specializes in the fields of coherent radar and microwave radiometry. The acquired firm will continue under the direct management of Carl A. Wiley.

## National Cash Register Electronics Expansion

HAWTHORNE, CALIF.—The Electronics Division of the National Cash Register Co. will double its facilities here by the end of this year, D. E. Eckdahl, division manager, has announced.

The NCR Hawthorne facility has served as the hub of the company's West Coast electronics research and development activities since its completion four years ago. Erection of the new addition to the plant this summer will enlarge the total area to more than 100,000 sq. ft.



## GOLD STAR SR

This d-c rectifier type welder does more things better than any other welder of its class because —

- a. Its new transformer (Miller designed and built) has integral flux diverter.
- b. Its new weld stabilized circuit delivers the ultimate in speed of metal deposition.
- c. Its new completely sealed semi-metallic rectifier — designed for welding — provides the most efficient d-c for welding ever devised.

These features contribute to the Gold Star SR's greater arc stability, denser welds, easy arc starting and flexibility to handle all electrodes in all positions.

Performance-proved wherever profits are important, the Gold Star SR is available in single and duplex models of 200 to 1200 amperes at 60% duty cycle ratings.



## GOLD STAR All-Weather SRH

The features that set the SR above and beyond the normal standards of welder performance belong to the SRH also. But, in addition to the horizontal design for easier stacking and paralleling, this welder has an "all-weather" construction that includes baked varnish coated transformers and rectifiers plus phosphatizing and painting of all base and sheet metal — even fan blades. Cam-Lok receptacles are standard equipment. The Gold Star SRH welds real well.



Complete specifications on these Gold Star models will be sent promptly.



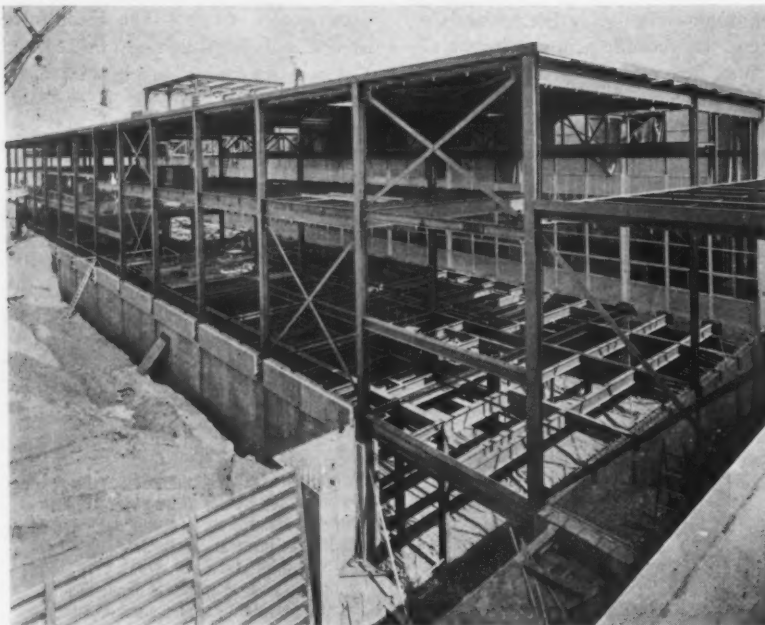
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## Kimberly-Clark Plant Expansion



FULLERTON, CALIF. — A total of 632 tons of structural steel has gone into a 200,000 sq. ft. addition to the Kimberly-Clark plant near Los Angeles.

Scheduled for completion next January, the structure will house a paper production line and will nearly double existing facilities on the 65-acre site.

The plant was fabricated by Bethle-

hem Steel Co. Structurals were joined by 14,440 high strength and machine bolts.

Kimberly-Clark will install a creped wadding machine, more outside pulp stockpile area, more rail facilities, a truck loading dock and increased office facilities during the expansion program.

## Engineers and Contractors Study Automatic Controls

LOS ANGELES — Modern automatic combustion safeguards for boilers and furnaces are eliminating the dangers of disastrous explosions that in the past have exacted fearful tolls in life and property.

That was the report made to a representative group of about 100 engineers, contractors and service personnel participating in the recent two-day Automatic Controls School at the Assyrian Auditorium, here.

This year's school was presented by Electronic Control Systems, Inc., Combustion Control Div., Electronics Corp. of America and George T. Hall Co., automatic controls distributor.

R. O. Broyles, sales engineer for the latter firm, presided at the sessions which emphasized the proper selection, application, maintenance and servicing of controls equipment for utility, industrial and commercial boilers and furnaces.

## Arrowhead and Puritas Acquire Del Mfg. Co.

LOS ANGELES—Arrowhead and Puritas Waters Inc., here, has completed negotiations for the acquisition of the assets of Del Mfg. Co. and will integrate operation of the two companies, it was announced recently by *Hugo W. Druehl*, president of Arrowhead.

Del manufactures a line of products for the bottled water industry which is distributed nationally by Arrowhead-Puritas. These products include a low-cost electric water cooler, a hot beverage bar and an atmospheric water cooler.

Druehl stated that this acquisition follows the Arrowhead-Puritas policy of diversification to broaden the base of its business. Five years ago the company purchased a glass factory for the production of five-gallon bottles for its own use and for other West Coast firms.

Del also manufactures products for the aircraft and missile industry.

## Alloy Steel And Metals Licensed by U.S. Steel

LOS ANGELES — Alloy Steel & Metals Co. here is the world's first foundry to be licensed by United States Steel Corp. to produce USS T-1 castings. The second oldest steel foundry in the Los Angeles area, Alloy Steel has a monthly rated capacity of about 400 tons.

Alloy Steel is authorized to produce castings of T-1 steel in a wide range of products for a score or so industries it serves throughout its primary market in 11 Western states.

## San Diego Increases Bulk Cargo Shipping

SAN DIEGO—Construction plans have been announced for elaborate bulk handling equipment at the 10th Avenue terminal here at the Port of San Diego, according to Port Director *John Bate*. The bulk loader is part of a \$3,600,000 improvement program for the pier authorized by voters in June.

During the past 11 months, the port has shipped more than 58,000 tons of bulk cargoes to Europe and the Far East and Bate predicts San Diego will be handling 500,000 tons of bulk cargo a year by 1962.

The new bulk cargo business began last August when the Southwest Flaxseed Association of Imperial invested \$40,000 to build a bulk loader at the 10th Avenue terminal.

## Morris Steel & Aluminum Occupies New Facilities

ALBUQUERQUE, N. M. — Morris Steel and Aluminum Co. has moved its offices and warehouse to a newly-erected building at 512 Pope St., N. E., here, it was announced recently by *LeRoy Morris*, general manager.

The building occupies 4,000 sq. ft. of space with ample parking, yard facilities, and loading docks.

The company, New Mexico's only distributor of brass mill products, also handles stainless steel, copper, steel and industrial supplies.

Morris Steel acts as manufacturers agents for such firms as Ziegler Steel Service Corp., Kilsby Tubesupply, U. S. Flexible Metallic Tubing Co., all of Los Angeles. They also distribute Titan Brass mill supplies and Kaiser Aluminum.



## Western Population Tops Nation's Growth

SAN FRANCISCO—"The seven Western states, Arizona, California, Idaho, Nevada, Oregon, Utah, and Washington, comprised the fastest growing section in the U.S. during the 1950's" according to a study prepared by the Economic Development and Research Dept. of the California State Chamber of Commerce.

The preliminary releases for the 1960 census indicates the continuation of a long-time trend in which the West has grown spectacularly. In the 20-year period, 1940-1960, the population of the West more than doubled while the nation increased 36%.

The preliminary 1960 census shows the West to have 23,230,000 persons compared to 16,674,000 in 1950. In the same 10-year period the nation grew from 151,236,000 to 179,500,000. In only two Western states, Oregon and Idaho, did the ratio of increase during this decade fall below the national increase of 18.6%. The rate of increase for California was 46.8%.

## Puerto Rico California's Best Overseas Customer

SAN FRANCISCO—The Caribbean Commonwealth of Puerto Rico was recently described as California's best per capita overseas customer.

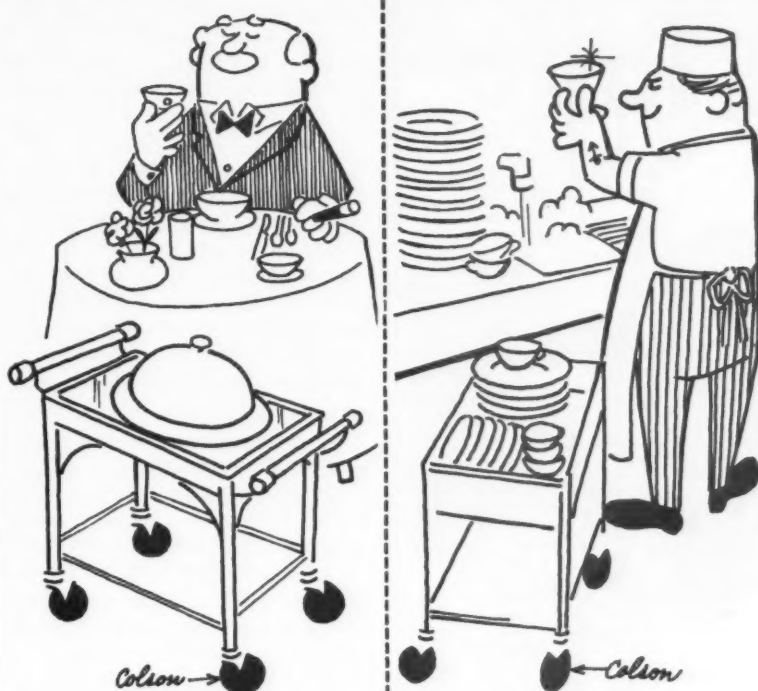
Paul de la Riviere, in opening the first Puerto Rican trade office at 235 Montgomery Street, here, said that California sales to Puerto Rico were currently running at the rate of \$5,000,000 a month and rising 13% a year.

Last year California's sales to Puerto Rico reached a record \$60,000,000, doubling the volume of 1954.

The new San Francisco area representative for Puerto Rico's Economic Development Administration advised West Coast and Northwest businessmen to keep close watch on the Caribbean island where more than 50 cents out of each new dollar created by economic growth is now spent for U.S. mainland goods.

Over 75 California companies now operate branch plants in Puerto Rico and more recently have announced plans to establish branch factories in Puerto Rico. Most of these are in electronics and metalworking.

## BIG WHEELS and LITTLE WHEELS



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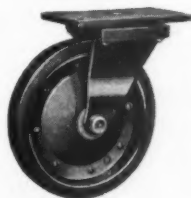
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102

## Contract News for the West

LOS ANGELES—The U. S. Army Ordnance Dist., with headquarters at 55 S. Grand Ave., Pasadena, announced the award of over \$5,000,000 in contracts for the two-week period ending July 15. San Francisco's Ordnance Dist., 1515 Clay St., Oakland, announced July 11 that their offices awarded contracts totaling \$6,200,000 during June. The announcement stated that the sum was in addition to previously announced contracts of \$34,400,000 to *Food Machinery and Chemical Corp.* for M-113 aluminum armored personnel carriers and \$8,000,000 to *Aerojet-General Corp.* for HAWK motors.

Contracts awarded from the Los Angeles District included:

*Gilfillan Brothers, Inc.*, Los Angeles, \$1,389,100 for Sergeant missile telemetry equipment and production engineering services; \$59,656 for engineering services related to Corporal missile system; and \$34,900 for technical manuscripts.

*Sperry Utah Engineering Lab*, Sperry Rand Corp., Salt Lake City, \$723,652 for Sergeant missile equipment and repair parts, and \$200,000 for research and development for Sergeant missile system.

*Douglas Aircraft Co., Inc.*, Santa Monica, \$697,406 for Nike missile repair parts.

*Aerojet-General Corp.*, \$403,375 for warheads and \$41,908 for instrumentation and installation for missile system test facility and solid propellants.

*Harvey Aluminum*, Torrance, \$250,000 for development and fabrication of projectile components; \$60,249 for catapult assemblies; and \$29,989 for production engineering services.

*Telemeter Magnetics, Inc.*, Los Angeles, \$394,074 for a high-speed digital memory system.

*Grand Central Rocket Co.*, Redlands, \$191,679 for investigation of solid propellant grains.

*Motorola, Inc.*, Scottsdale, Ariz., \$75,595 for telemetry sets, and \$40,843 for micro-miniaturization development work.

*California Institute of Technology*, Pasadena, \$100,000 for Sergeant missile research and development work.

Other companies receiving contracts

under \$100,000 from the U. S. Ordnance District, Los Angeles, include: *Firestone Tire & Rubber Co.*, Los Angeles, \$99,992; *Golden State Fireworks Mfg. Co., Inc.*, Saugus, \$99,522; *Librascope Div., General Precision, Inc.*, Glendale, \$98,000; *University of Southern California*, Los Angeles, \$84,975; *Autonetics Div.*, North American Aviation, Inc., Downey, \$70,764; *AiResearch Mfg. Co.*, Los Angeles, \$64,127; and *Resdel Engineering Corp.*, Pasadena, \$49,889.

Contracts awarded for amounts under \$31,000 include: *Eidal Mfg. Co.*, Albuquerque; *Electro-Optical Systems, Inc.*, Pasadena; *Borg Warner Controls*, Borg-Warner Corp., Santa Ana; *Missile Air Div.*, U. S. Chemical Milling Corp., Manhattan Beach; and *U. S. Science Corp.* Los Angeles.

Contracts awarded through the San Francisco Dist. included:

*Food Machinery and Chemical Corp., San Jose Ordnance Div.*, \$1,077,528 for design, development and fabrication of special weapons carrier systems, and special services on airborne armored multipurpose vehicle family.

*Stanford Research Institute*, Menlo Park, extended research projects under three Ordnance contracts totalling \$952,634. *Lockheed Missiles and Space Div.*, Sunnyvale, continued flights of the XQ-5 target missile to test American anti-aircraft defenses under a \$350,000 contract modification.

Other major contractors, amounts and scope of Army Ordnance work include:

*Varian Associates*, Palo Alto, \$198,526 for Klystron tubes;

*Ampex Corp.*, Palo Alto, \$132,498 for magnetic recorders and tapes;

*Stanford University*, Stanford, \$64,155 for basic research into Riemann surfaces and compound semiconductors;

*Hewlett-Packard Co.*, Palo Alto, \$51,570 for oscilloscopes and wave analyzers;

Contracts for less than \$27,000 were awarded to *Lenkurt Electric Co., Inc.*, San Carlos; *University of California*, Berkeley; *L & L Sales Co.*, San Francisco; *Friden Inc.*, San Leandro; *Laher Spring & Electric Car Corp.*,

Oakland; and *Ralph Brodie Co.*, San Leandro.

In the Seattle area, major awards were to *Pacific Car and Foundry Co.*, Renton, Wash., \$2,180,318 for services and supplies on air transportable self-propelled artillery and lightweight amphibious cargo carriers; *Skagit Steel and Iron Works*, Sedro-Woolley, Wash., \$311,325 for 106-MM cartridge cases; and University of Washington, Seattle, \$15,345 for research.

Other contract news received by WESTERN INDUSTRY during the past month include:

*Eitel-McCullough, Inc.* over \$6,000,000 mostly for high power klystron tubes to be made at the company's San Bruno, Calif. Power Klystron Div.

*Marquardt Corp.*, Van Nuys, Calif., \$1,500,000 for the design and fabrication of a ramjet propulsion system for a supersonic Army target missile system, a subcontract from Columbus Div., North American Aviation Inc.

*Lockheed Aircraft Service*, \$1,500,000 contract from Trans World Airlines for the remanufacture of six Super Constellation aircraft from passenger to all-cargo configuration.

*Summers Gyroscope Co.* follow-on orders exceeding \$1,200,000 from Martin Co.'s Orlando, Fla. Div., gyroscopes.

*Space Electronics Corp.*, Glendale, \$1,000,000 sub-contract, with Aerojet-General for the fabrication of electronic systems.

*Siegler's Corp.*'s *Hallamore Electronics Div.*, contracts totaling about \$1,000,000 from Martin Co.'s Denver Div. for Titan missile program.

### Vibraswitch Detectors Used On Transwestern Pipeline

ANAHEIM, CALIF. — Vibraswitch malfunction detectors, produced here by Robertshaw-Fulton's Aeronautical and Instrument Div., are scheduled for installation on main booster compressors and secondary rotating equipment at five pumping stations on the Transwestern gas pipeline.

Robertshaw officials here said 50 of the Vibraswitch devices had been ordered for use on the 1600-mile, \$150,000,600 pipeline. They will be installed at pumping stations located at Carlsbad, Roswell, and Mountain Air, all in New Mexico; and at Winslow, Ariz. The Transwestern pipeline joins the Pacific Lighting Gas Supply Co. pipeline at Topaz, Ariz.

### First Brick-Making Factory For Alaska

ANCHORAGE — The first trial run of brick-making machinery at the Atlas Brick & Tile Co., Inc., was made last month at the company's newly completed plant, 6½ miles from Anchorage.

The first production from the plant, Alaska's only brick-making factory, will be common standard building bricks and Norman standard bricks. Atlas will use local clays, including clay taken from above the high-tide level of Cook inlet.

From preparation of raw materials through the final burn, the manufacture of a brick in the plant will take about 12 days, according to *Miles Beaux*, Atlas official. The firm will make floor and patio tile, drain tile, fire brick and sewer pipe and tile.

### New Joint Ownership Consolidated Systems

MONROVIA, CALIF. — Agreement on joint ownership of an electronic systems engineering firm located here by Allis-Chalmers Mfg. Co. and Bell & Howell was announced recently.

R. S. Stevenson, president, Allis-Chalmers and Charles H. Percy, president, Bell & Howell in a joint announcement, said that Allis-Chalmers would acquire 50 per cent of the common stock of Consolidated Systems Corp., here, a wholly owned subsidiary of Bell & Howell's Consolidated Electrodynamics Corp.

Consolidated Systems Corp. employs more than 525, one-third of which are technical personnel. Operations include administrative, engineering and manufacturing facilities located in a 68,000 sq. ft. building completed in 1958. The plant is located on a 10-acre site.

### Conrad-Carson Expand Sales Organization

SAN DIEGO — Conrad-Carson, Inc., here have announced the appointment of Paul Nurches Co. for the greater Los Angeles area and Hamilton Electro Sales Co. for the San Francisco Bay region.

The firm currently supplies precision wire wound resistors and resistance products to the electronic and aircraft industry. They have recently announced the development of a solid state detector known as the Humistor for direct sensing of water vapor and gases.

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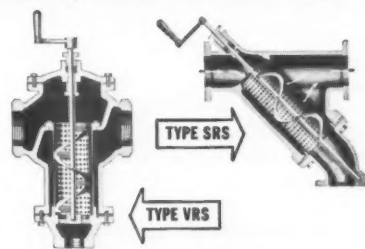
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Tensile strength 70,000 lbs. per square inch minimum for saturated steam or liquids to 600 psi, non-shock and 750° F. total temperature.

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**W. A. Harding**  
Linde Co.



**R. W. Applebee**  
Rapistan of Calif.



**J. D. Richards**  
Bemis Bros. Bag

■ **Allen B. Hughes**, Palos Verdes Estates, Calif., has been appointed West Coast dist. manager, Bay State Abrasive Products Co.

■ **Locke Rowe** has been named manager of customer relations, Wilkerson Corp., Denver.

■ **James L. Frost** has been named sales manager, Northwest Dist., Clark Equipment Co., Industrial Truck Div.

■ **Robert H. Braun, Jr.**, has been elected president Robert H. Braun Co., Pico Rivera, Calif., succeeding **Robert H. Braun, Sr.**, who is now chairman of the board.

■ **T. D. Vetrosky** has been appointed supervisor of claims, Bethlehem Steel Co., Pacific Coast Div., San Francisco.

■ **William A. Harding** is new region manager, Los Angeles, for new Cryogenic Products Dept., Linde Co.

■ **Robert W. Applebee** has joined Rapistan of California, Inc., Los Angeles, as manager of engineering.

■ **J. D. Richards** has been named manager Seattle plant and Pacific Northwest sales div. of Bemis Bros. Bag Co. in Vancouver, Wash.

■ **Edward J. McLaughlin** is manager, sales and product development for Oronite Chemical Co.'s new Petroleum Chemicals Div., San Francisco.

■ **Darrell V. Kamery** has been named training coordinator, Daystrom, Inc., Control Systems Div., La Jolla, Calif.

■ **William S. Aiken** has been named director of engineering, Thompson-Ramo-Woodridge Products Co., Beverly Hills.

■ **James D. Bond** is new president of Sila-Flex, Inc., Costa Mesa, Calif., subsidiary of Ecko Products Co.

■ **Eugene John Freeman** has been appointed vice-pres. and general manager of Roberts Electronics, Inc., Hollywood, Calif.

■ **Dick Merrick** has joined the sales staff of Delta Lines, Inc., at Los Angeles.

■ **W. C. Lehigh** has been named asphalt sales rep for Shell Oil Co. on the West Coast.

■ **Norman W. Blad** has been added to the San Carlos, Calif., dist. construction and mining equipment sales staff of Atlas Copco Pacific Inc.

■ **Herbert A. Finke** has been named director of long range product planning at Varian Associates, Palo Alto, Calif.

■ **Chester G. Wilson** has been appointed manager, Westinghouse Electric Corp.'s manufacturing and repair div., Seattle.

■ **Robert G. Arnold** has joined Southwestern Industries, Inc., Los Angeles, as sales manager.

■ **James R. Price** has been named products manager, Asbestos Bonding Corp., Napa, Calif.

■ **Arild M. Brenne** has been promoted to executive assistant, California operations of Stephen Patkay & Associates, Pasadena, Calif.

■ **W. P. Franklin** has been elected vice-pres. marketing, Kemex, Inc., South Gate, Calif.

■ **Donald C. Bowersock, Jr.**, is filling new post of manager, engineering business development, Arthur D. Little, Inc., Santa Monica, Calif.

■ **John F. Gardner** has been appointed plant engineer, Hughes Aircraft's ground systems group, Fullerton, Calif.

■ **Forrest F. Hinkley** has purchased Speed-D-Burr Corp., Glendale, Calif., and will serve as pres. and general manager.

■ **Edmund Loritz, Jr.**, will cover California and Nevada as hardware sales rep Atkins Saw Div., Borg-Warner Corp.

■ **Robert M. Sherwin**, Tacoma, Wash., has been named technical manager, Western Chemical Div., Hooker Chemical Corp.





**R. D. McGranahan**  
Wilshire Oil



**Paul Goldner**  
J. O. Ross Engineering



**L. E. Hedrick**  
Westinghouse



**R. E. Palmer**  
Garrett Corp.



**A. S. Asquith**  
Lamson Corp.



**J. N. Dodson**  
ESCO



**W. D. Patterson**  
Rucker Co.



**W. B. Garrison**  
Lunkenheimer

■ **Raymond D. McGranahan** has been appointed president Wilshire Oil Co., Los Angeles, independent marketer, refiner recently acquired by Gulf Oil Corp.

■ **Paul Goldner** is new district manager at Seattle for J. O. Ross Engineering Div., Midland-Ross Corp.

■ **Larry E. Hedrick** is new manager of Sunnyvale Mfg. Div., Westinghouse Electric Corp.

■ **Richard E. Palmer** has been appointed manager Garrett Corp., AiResearch Mfg. Div., Los Angeles.

■ **A. S. Asquith** has been appointed assistant general manager of Lamson Corp.'s new Western Div. at San Francisco.

■ **James N. Dodson** has been transferred from Portland to Honolulu as office manager for Electric Steel Foundry Co.

■ **Wayne D. Patterson** is newly named sales engineer for the Rucker Co. at Los Angeles.

■ **W. Britt Garrison** has been transferred from Denver sales to Los Angeles branch of Lunkenheimer Co.

■ **D. F. Folz** has been appointed director of Lockheed Aircraft Corp.'s diversification task force.

■ **Vernon M. John** has been appointed vice-pres. finance, Idaho Maryland Industries, Inc., Glendale, Calif.

■ **Robert L. Daniels** of Garrett Corp. is new president of Los Angeles Industrial Distributors Association.

■ **Burt Osterman** is newly appointed regional traffic manager, Pennsalt Chemical Corp., Tacoma, Wash.

■ **Chester H. Pedersen** has been named sales manager Seattle dist. for Electric Steel Foundry Co.

■ **Leslie H. Bozeman** has been appointed manager Los Angeles factory branch of Clark Equipment Co.'s Brown Trailer Div.

■ **A. E. Sprando** has been named chief engineer of Iron Fireman Electronics Div. at Portland.

■ **Frank P. DeLuca, Jr.**, is new president of Acoustica Associates, Inc., Los Angeles, and **Robert L. Rod**, chairman of the board.

■ **Thomas DuFour** has been named manager marketing, Hexcel Products Inc.'s new Applied Plastics Div.

■ **George Holder**, retiring from Mechanical Specialties Co., Los Angeles, was honored at a dinner.

■ **C. J. Dyer** has been appointed personnel representative, Bonanza Air Lines, Las Vegas.

■ **J. Dickason**, general manager of Metal Control Laboratories, Huntington Park, Calif., has been re-elected chairman, Western Div., American Council of Independent Labs.

■ **John R. Welty** is newly named product manager, diodes and rectifiers, Motorola's Semiconductor Products Div., Phoenix.

■ **Harold Boex** has been assigned to cover Oregon and Washington in addition to Northern California for Central Screw Co.

■ **T. A. Weiss, Jr.**, has been appointed vice pres., sales and marketing, United Control Corp., Seattle.

■ **Fred A. Allehoff** has been named sales engineer, S&C Electric Co., for Oregon, Idaho and Montana.

■ **Roy Omans** has joined Fabriform Metal Brazing, Los Angeles, as assistant general manager, sales.

■ **J. Q. Cope** has been appointed vice-president California Chemical Co., San Francisco.

■ **T. F. Olson** has been appointed financial vice-pres. of Eimco Corp., Salt Lake City.

■ **Charles K. Benson** has been elected president of Heat and Control, Inc., San Francisco.

■ **George Dotson** has been named office manager for Frank A. Emmet Co., South Pasadena, Calif.

■ **Holt M. Derickson** is the new president of Alaska Redi-Mix, Inc., Fairbanks, Alaska.

■ **George H. Rathmell**, general plant manager for Pacific Telephone, Los Angeles area, is new president of Society for Advancement of Management chapter.

■ **Howard W. Hill** is newly appointed treasurer of Zero Mfg. Co., Burbank, Calif.

■ **H. R. Gable** is newly appointed sales manager on the Pacific Coast for Food Machinery Div., Baker Perkins Inc.

■ **Ray V. Long** has been elected president Vapor Recovery Systems Co., Compton, Calif.

- **Lee P. Morris** has been appointed assistant manager, Standard Oil Co. of Calif., Western Operations, Inc., at Honolulu.
- **Warren Duggan Sparks** has been named dist. sales rep, Los Angeles area, Ramset Fastening System.
- **David M. Snow** has joined American Electronics, Inc., Los Angeles, as corporate director of Industrial Relations.
- **John D. Vickrey** has been promoted to sales manager, Selenium Products Div., International Rectifier Corp., El Segundo, Calif.
- **P. B. Smith** has been named Seattle dist. manager and **L. F. Monahan**, Denver dist. manager for Bailey Meter Co.
- **George Havas** has been appointed vice pres. and director engineering, Kaiser Industries Corp., Oakland, Calif.
- **William P. Faris** has been appointed assistant sales manager and **Stanley B. Berkey**, manager quality control, Union Die Casting Co., Whittier, Calif.
- **Paul R. Heitmeyer, Jr.**, has been appointed safety engineer, International Paper Co.'s Gardiner, Ore., Branch.
- **Herb Ende, Jr.**, Los Angeles, vice pres. and manager Ladish Co.'s Pacific Div., has been elected to the board of directors, Drop Forging Assoc.
- **F. C. Milner** has been named manager Los Angeles field office, military sales dept., Librascope Div., General Precision, Inc.
- **Charles W. McDaniel** has been named Western Regional manager Fostoria Corp., at Carmel, Calif.
- **Robert D. Christensen**, San Francisco, is new Northwest Regional manager Byron Jackson Pumps, Inc.
- **Putnam S. Robbins**, Mill Valley, Calif., has been named coordinator market research, California Red-Wood Association.
- **Lyle N. Omdahl** has been appointed new controller for Omark Industries, Inc., Portland.
- **L. O. Simenson** has been appointed assistant manager of operations, Dow Chemical Co.'s Western Div.
- **Donald L. Weir** has been appointed Pacific regional sales manager, Hazel-Atlas Glass Div., Continental Can Co., at San Francisco.
- **W. Lee Campbell** has been named regional sales manager, Mechanical Specialties Co., Los Angeles.
- **Robert G. Larsen** has been promoted to Western dist. rep, Quick-Way Truck Shovel Co., Daly City, Calif.
- **Eugene D. Boone** has been promoted to supervisor, electro-mechanical assembly, Pacific Scientific Co.'s Anaheim, Calif. Div.
- **Charles Histed** is newly named assistant sales manager, Stillman Rubber Co., Culver City, Calif.
- **Eric Lemke** has been appointed manager tubular sales, Keenan Pipe & Supply Co., Los Angeles.
- **Robert A. Iehl** has been named production manager Printed Circuits, U. S. Engineering Co., Van Nuys, Calif., a div. of Litton Industries.
- **Rube Wolf, Jr.**, has joined Airtron-Pacific, Los Angeles, as contracts administrator. Airtron is a div. of Litton Industries.
- **Charles Lester Friedmann** has joined U. S. Borax & Chemical Corp. as a senior process engineer at Boron, Calif.
- **James B. Black**, chairman of Pacific Gas & Electric Co., has accepted chairmanship of Western Public Utilities Committee of Project HOPE.
- **Martin Usab** has been elected president of Dynatech Plastics, Inc., Santa Ana, Calif.
- **Raymond L. Donaldson** has joined Besley-Welles Corp., Los Angeles, as West Coast service rep.
- **Irving P. Siminoff** has been named Western dist. manager, Electric Auto-lite Co.'s Electrical Products Div.
- **E. E. Ferrey** has been appointed manager of the Western Electronic Mfgs. Association.
- **J. L. S. Snead, Jr.**, has resigned as president of Consolidated Freightways, Inc., Menlo Park, Calif.
- **R. L. Rickenbacher**, Ringsby Truck Lines, has been elected president of American Material Handling Society, Denver chapter.
- **M. A. Nelson** has been named chairman, Pacific Southcoast Freight Bureau, San Francisco.
- **O. Phillip Baker** has joined Rapi-stan of California, Inc., Los Angeles, as office manager.
- **Paul E. Paules** is newly appointed Western regional manager, Scientific and Process Instruments Div., Beckman Instruments, Inc., Fullerton, Calif.
- **W. W. Smith** has been named manager, California Plant, General Electric's Distribution Assemblies Dept.
- **Jack E. Carlson** has been appointed assistant manager of casting sales, Alcoa's Vernon, Calif., works.
- **William R. Works** has been appointed midwest sales manager, Crown Zellerbach Corp.'s new building products sales div. in San Francisco.
- **Louis G. Winn** is new general manager, branches, Pacific Coast Operations, Pittsburgh Plate Glass Co., Paint and Brush Div., Berkeley, Calif.
- **Jim Bowen** is newly named marketing sales manager, Zolatone Process, Inc., Los Angeles.
- **Moses C. Long** has joined Microwave Electronics Corp., Palo Alto, Calif., as assistant to pres.
- **Dr. Ernst H. Krause** is director of new Technical Staff, Aeronutronic Div., Ford Motor Co., Newport Beach, Calif.

## CLASSIFIED SECTION

Space is sold as advertisers' inches. All advertisements in this section are 1/4 inch short of contracted space to allow for borders and composition. Rates are \$16.00 a column inch. Copy should be sent in by the 20th of preceding month if proofs are required; by the 25th if no proofs are required.

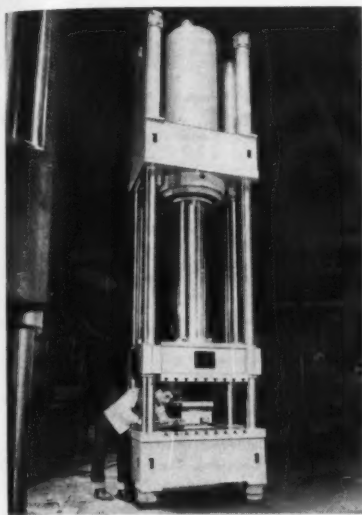


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## New Presses For Molding Large Plastic Parts



LOS ANGELES—Paul H. Bottoms, vice-president and manufacturing director of Swedlow, Inc., here, has announced the expansion of press facilities for the molding of large reinforced plastic parts. Two specially designed 400 ton presses have been constructed and installed by Hysco.

The new presses are rated at 2500 psi gauge, with 36 in. x 36 in. steam heated platens. Maximum pressure of full platen area is 605 psi. One of the presses has a 60 in. stroke, with 72 in. daylight; the other has adjustable daylight to 120 in.

## Hughes Buys Meva, Cyclotron Maker

LOS ANGELES — Hughes Aircraft Co. has announced the purchase of MevA (cq) Corp., Santa Monica, Calif., the nation's only commercial manufacturer of cyclotrons, high-energy machines popularly known as "atom smashers."

In the past such machines have been built by universities or government agencies, the announcement, made by Dr. John W. Clark, manager of Hughes' nuclear electronics laboratory, said.

MevA previously was owned and operated by Dr. Byron T. Wright and Dr. Kenneth R. MacKenzie, UCLA physics professors, who sold their stock to Hughes, Dr. Clark said. He did not disclose the purchase price.

Drs. Wright and MacKenzie have become members of Hughes' consulting staff to contribute technical knowledge on construction of cyclotrons, linear accelerators and other high-energy machines.

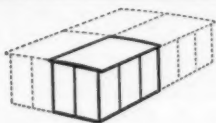
## Landsverk Electrometer Acquires New Building

GLENDALE, CALIF. — Landsverk Electrometer Co., here, has acquired a new one-story building at 600 Sonora Ave. The 6,000 sq. ft. building houses their machine and metalworking shop which moved from Burbank recently. The firm makes instruments for measuring radioactivity.



"When I have dead yard space in one of our plants, I convert it to a work or storage area. The quickest and most inexpensive way is Porta House."

Porta Houses are prefabricated for bolted assembly from waterproof plywood panels. Any size, from 54 sq. ft. to 10,000 sq. ft. Always immediately available. Four-wall enclosure or one or more sides open; doors and windows positioned where desired.



SIZES: 6' OR MORE X 9' OR MORE

## PORTA HOUSE

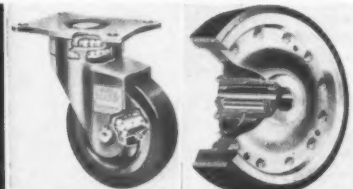
Ridgely K. Dodge. 6767 Broadway Terrace, Oakland, Calif.  
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... a wide choice of treads suited to all types of floors, including Darnelloprene oil, water and chemical-resistant treads, make Darnell Casters and Wheels highly adapted to rough usage.

### 2 RUST-PROOFED

... by zinc plating. Darnell Casters give longer, care-free life wherever water, steam and corroding chemicals are freely used.

### 3 STRING GUARDS

... Even though string and ravelings may wind around the hub, these string guards insure easy rolling at all times.

### 4 LUBRICATION

... all swivel and wheel bearings are factory packed with a high quality grease that "stands up" under attack by heat and water. Zerk fittings are provided for quick grease-gun lubrication.

*Engineered and Built  
for UNFAILING PERFORMANCE  
—That's The Big Difference!*



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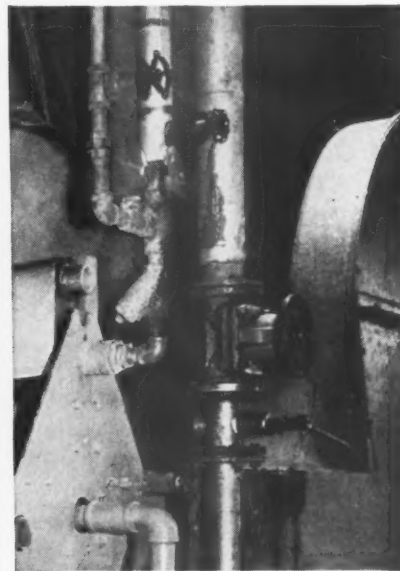
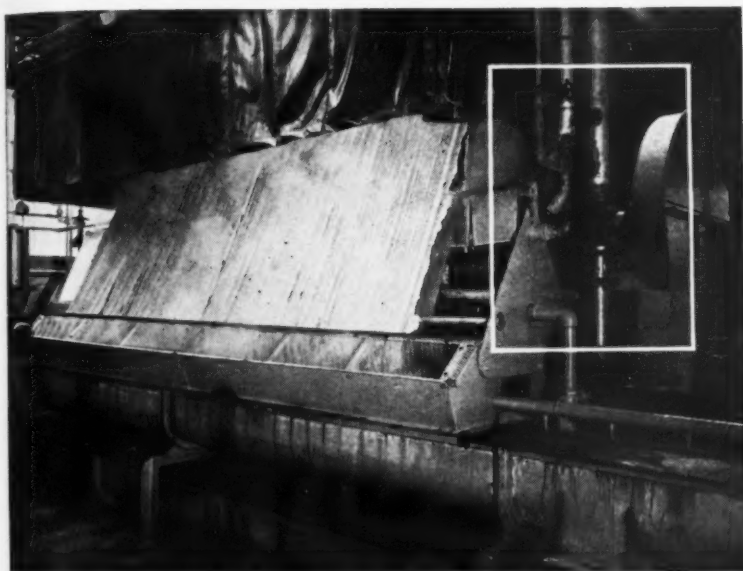
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# STANDARD ENGINEER'S FIELD REPORT

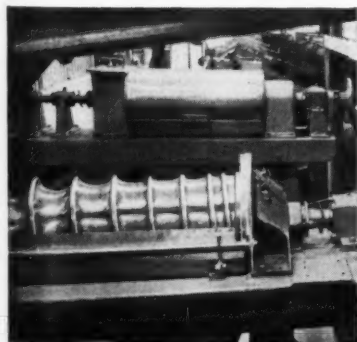
Chevron  
PRODUCT Industrial Grease  
Exchange Orange Products  
FIRM Ontario, California

## Chevron Grease eliminates separation in bearings



Heat, moisture and fruit acids create a constant problem of rust, corrosion and grease separation on anti-friction bearings at Sunkist Growers' by-products plant. (See close-up) But Chevron Industrial Grease protects all equipment. Maintenance Supervisor Gene Gilbert says, "This grease even holds up

in the steamy air around our vacuum drum filter (above) used in producing pectin...other greases we've used tended to separate into oil and soap base in packed bearings...even caused failures. But not Chevron Industrial Grease. It never separates, and does a better job of fighting rust and corrosion, too!"

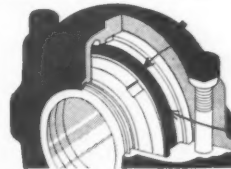


Juice finishers (left) and pulp drier (right) use Chevron Industrial Grease, demonstrating wide application of this lubricant at Exchange Orange Products. Because this grease is waterproof, frequent washing down of finishers has no effect on lubrication efficiency. In pulp drier and dehydration equipment Chevron Industrial Grease works in temperatures up to 300°—yet this same lubricant does equally well in quick freeze votators at low temperatures. Exchange Orange Products operates continuously 9 months a year, producing orange juice, syrups, oil, pectin, dairy feed and a long list of other by-products from oranges not marketed as fresh fruit.



TRADEMARKS "CHEVRON" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

### Why Chevron Industrial Grease provides superior lubrication



- Top wear-prevention qualities
- Unusual water resistance
- Rust protective
- Non-corrosive
- Mixes with any grease
- Extreme work stability
- Melting point, 500°F. plus
- Pumpable over wide temperature range

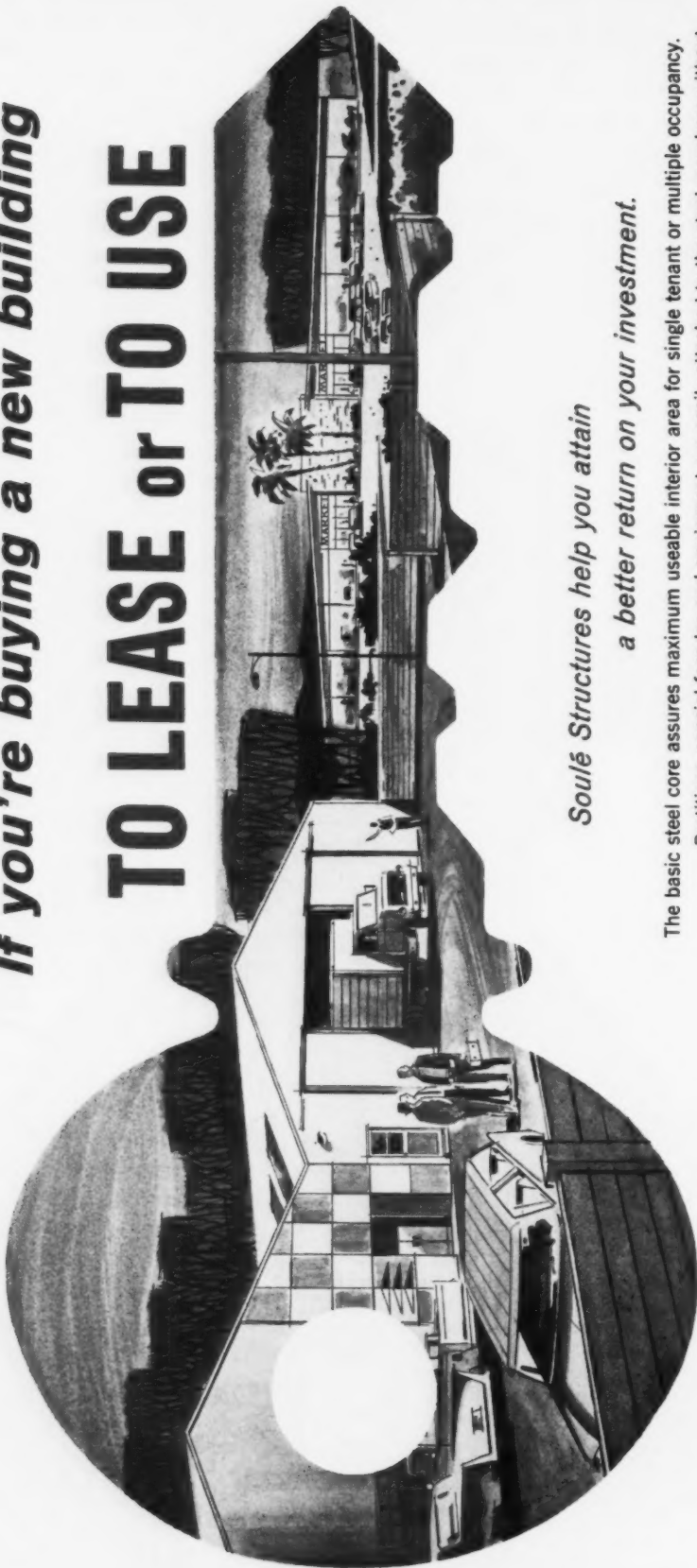
For More Information on this product contact your Standard Engineer or Representative or write 225 Bush Street, San Francisco 20, California.

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